

August 9, 2000

State of Utah Division of Oil, Gas & Mining 1594 West North Temple, Suite 1210 Salt Lake City, UT 84114-5801

Attention: Lisha Cordova

RE: Applications for Permit to Drill

Gentlemen:

Enclosed, in duplicate, are Applications for Permit to Drill (Form 3) for the following wells in Emery County, Utah.

Clawson Spring State G-2 Clawson Spring State SWD-3 Clawson Spring State SWD-4 Potter etal 2

Please call me at (281) 874-8766 if you require further information or have any questions.

Sincerely,

Mudy Davidson Regulatory Analyst

JD/me enclosures

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DIVISION OF OIL, GAS AND MINING

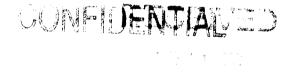
STATE OF UTAH DIVISION FOIL, GAS AND MINING

	APPLICATION	FOR PERMIT TO DI	RILL UK DEEPEN			
a. TYPE OF WORK	DRILL X	DEEPEN			5. LEASE DESIGNATION AN	
b. TYPE OF WELL	[7]				ML-48	217
OIL WELL	GAS WELL X	GOALBED METHANE OTHER WORLD DISP.	SINGLE MULTIPLE ZONE ZONE		6. IF INDIAN, ALLOTTEES (OR TRIBE NAME
NAME OF OPERATOR	ANADARI	O PETROLEUM COF	RPORATION		7. UNIT AGREEMENT NAME	
. ADDRESS AND TELEPH	HONE NO.				8. FARM OR LEASE NAME	WELL NO:
	17001 Northchase Driv	ve. Houston, Texas 7	7060 281/875-1101		Clawson Spring	State SWD-4
LOCATION OF WELL (Report location clearly and in acc				9. API WELL NO.	
At surface	report location deality and in dec	ordance with any state regains	436/2	/		
	1320 FNI	660 FEL, NE Section 1	75676 13 T16S R8F		10. FIELD AND POOL OR W	ILDCAT
At proposed prod. zone	1020111	333 . mm, 11m 3300011	5%%	e to a	СВ	
	1320 FNI	660 FEL, NE Section 1	13 T16S R8F		11. SEC. T.R.M. OR BLK. AI	
	.0202		, , , , , , , , , , , , , , , , , , , ,		Section 13,	T16S R8F
4 DISTANCE IN MILES A	AND DIRECTION FROM NEARES	ST TOWN OR POST OFFICE			12 COUNTY	13. STATE
		19 miles SW of Price,			Emery	Utah
NEAREST PROPERTY	5. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg, unit line, if any) 16. NO. OF ACRES IN LEASE 200.42					VELL.
18. DISTANCE FROM PR NEAREST WELL, DRI APPLIED FOR, ON TH	LLING, COMPLETED, OR	4500	19. PROPOSED DEPTH 8050	20. ROTARY OR CABLE TOOLS Rotary		
1. ELEVATIONS (Show w	hether DF, RT, GR, etc.)		* · · · · · · · · · · · · · · · · · · ·		22. APPROX. DATE WO	ORK WILL START.
		6399'			08/15/	2000
?3.		PROPOSED CA	SING AND CEMENTING PROGRAM			
SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH		QUANTITY OF CEMENT	
17-1/2	13-3/8, H-40	48#	300'		420 cu. Ft.	
12 1/4"	8 5/8 K-55	24	2800		1800 cu. Ft.	
7 7/8"	5 1/2" N-80	17	8050		TBD	
	T					

1. Survey Plat

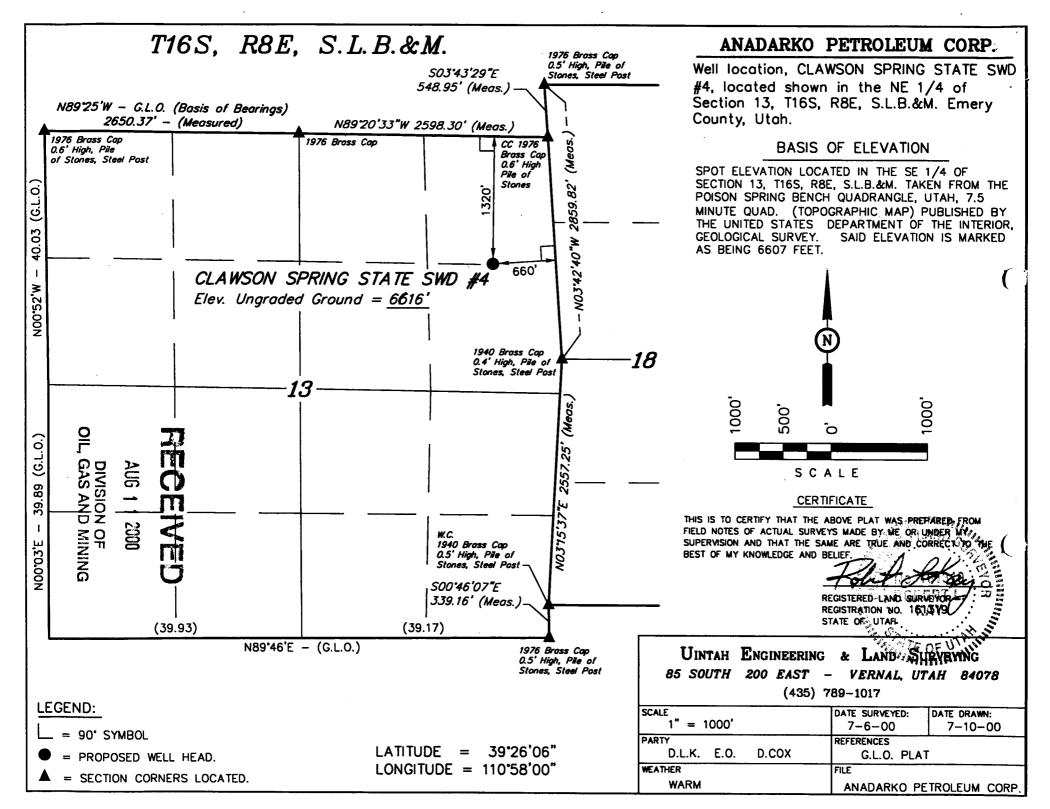
- 2. Drilling Plan with BOP Schematic.
- 3. Topo & Access Map & Area Map.
- 4. Pit & Pad Layout with cross sections of pit, pad, & rig layout.

Utah Oil & Gas Lease Bond: 224351 Utah Bond of Lessee: 203521 Water Source: City of Price Surface Owner: SITLA



DIVIDION OF OIL GAS AND MIDMIG

SIGNED	July Dane	Cion	TITLE _	Judy Davidson Regulatory Analyst	DATE	08/09/2000
(This space State office	use.)					
PERMIT NO.	43-015-30477				APPROVAL DATE	
Application approval does	s not warrant or certify that the applicant he	lds egal or equitable title t	o those rights in t	he subject lease which would ent	itle the applicant to conduct o	perations theron.
CONDITIONS OF APPRO	DVALIF ANY:	i i	BDA	DLEY G. HILL	ı.	٠١. اه
APPROVED BY	man Chin	<u> </u>	RECLAMA	TION SPECIALIST	DATE _	4/14/00
		See Instruction				



DRILLING PLAN TO ACCOMPANY APPLICATION FOR PERMIT TO DRILL

Company: Anadarko Petroleum Corporation Well: Clawson Spring State SWD-4

Location: 1320' FNL & 660' FEL Lease: ML-48217

T16S, 8E, Section 13

Emery County Surface Elevation: 6616

A. <u>Estimated Tops of Important Geologic Markers:</u>

Emery	Surface	Buckhorn Cong.	4436	Carmel Anhy	6536
Bluegate Shale	2006	Morrison	4516	Carmel Lime	6711
Ferron Sand	3106	Summerville	5016	Navajo	6931
Tununk Shale	3341	Curtis	5416	Kayenta	7271
Dakota Sand	3726	Entrada	5566	Wingate	7351
Cedar Mtn	3776	Carmel	6216		

B. <u>Estimated Depth at which Water, Oil, Gas or other Mineral-Bearing zones are expected to be encountered:</u>

Gas-bearing Ferron Sandstone Member is expected to be encountered from: 3106 - 3726.

All fresh water zones and prospectively valuable mineral zones encountered during drilling will be recorded by depth and adequately protected. All significant oil and gas shows will be tested to determine commercial potential.

C. Pressure Control Equipment:

A 9" 3000 psi WP double gate hydraulic BOP with pipe rams and blind rams will be installed on the 8-5/8" casinghead. In addition to the BOP stack, a rotating head will be installed on top of the BOP to assist in safe air drilling operations. The BOP stack will be tested prior to drilling below intermediate casing. The ram preventers will be tested to 70% of the working pressure of the casinghead. The annular will be tested to 50% of its working pressure. Operational checks will be made daily or on trips. A BOP schematic is shown on attached Exhibit "A".

The BOP system will be consistent with API RP 53. Pressure tests will be conducted before drilling out from under all casing strings which are set and cemented in place. Blowout preventer controls will be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned. Preventers will be inspected and operated at least daily to ensure good mechanical working order. This inspection will be recorded on the daily drilling report. Preventers will be pressure tested before drilling casing cement plugs. The accumulator system will meet IADC guidelines concerning pump capacities, storage capacity, and reservoir volume. Closing unit fluid volume will be sufficient to pre-charge the system to operating pressure plus 50% excess. One set of controls will be in the doghouse on the rig floor and one set will be remote on the drilling pad.

D. Casing Program

Surface Casing: 13-3/8", 48#, H40, STC new casing will be set at approximately 300'. Intermediate Casing: 8-5/8" 24#, K55, LTC, new casing will be set at approximately 2800'. 5-1/2" 15.5#, K55, LTC, new casing will be set at approximately 8050

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D. Casing Program (continued)

Casing Design Factors

The safety factors on casing strings will equal or exceed the following values:

Collapse Joint Strength 1.0 1.6

Burst

1.33

E. Cement Program

Surface -

Cement will be circulated to the surface. Casing will be cemented with approximately 420 cu. ft. (350 sx, 15.6 ppg, 1.19 cf/sk) of API Class 'A' cement.

Intermediate -

Cement will be raised to the surface casing using an API Class 'A' cement lead volume of approximately 1500 cu. ft. (750 sx, 12.8 ppg, 2.0 cf/sk) and an API Class 'A' tail cement volume of approximately 300 cu. ft (250 sx, 15.6 ppg, 1.19 cf/sk). Cement will be placed 200' above

shoe

Production -

Casing will be cemented back to intermediate 8-5/8" casing using API Class 'H' cement and a "DV" stage cementing collar with a two stage cement job. The actual cement volumes and DV stage cementing tool placement will be based upon actual depth and gauge determined from open hole logs.

Additional additives will be used to retard the cement, accelerate the cement, control lost circulation, or control fluid loss. All cementing will be done in accordance with API cementing practices.

Mud Program and Circulating Medium: F.

A truck-mounted air drilling rig will be used to drill the surface hole to 300' and to pre-set the surface casing before moving a drilling rig on location to drill the rest of the hole to TD.

An air or air/mist system will be used for drilling from below surface pipe at 300' to 2800.

An air/mist system will be used from 2800' to approximately 5000'. The hole will then be displaced with an 8.7 to 9.2 ppg Low Solids Non Dispersed mud. Bentonite gel will be the primary additive with minor additions of lime, caustic, soda ash, and polymer to control viscosity.

The mud/fluid system will be monitored visually and with a gas chromatograph detector.

G. Coring, Logging, and Testing Program:

- The following logging program is planned:
 - 1. SDL-GR-CAL over prospective intervals (300 to 2800' and 2800 to 6200').
 - 2. DIL- SP-GR-CAL over prospective intervals (2800' to 6200')
- A mud logging unit with chromatograph will be used from approximately 1000' to TD. b.
- After production casing is installed, a cement bond log will be run to determine the top of cement. Productive zones will then be perforated and tested. Water produced during testing will be contained in the temporary reserve pit.

Abnormal Conditions and Potential Hazards: H.

Abnormal conditions such as abnormal temperatures or pressures are not anticipated. Potential hazards such as H2S are also not anticipated.

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ANADARKO PETROLEUM CORP.

CLAWSON SPRING STATE SWD #4

LOCATED IN EMERY COUNTY, UTAH **SECTION 13, T16S, R8E, S.L.B.&M.**



PHOTO: VIEW FROM CORNER #7 TO LOCATION STAKE

CAMERA ANGLE: SOUTHEASTERLY



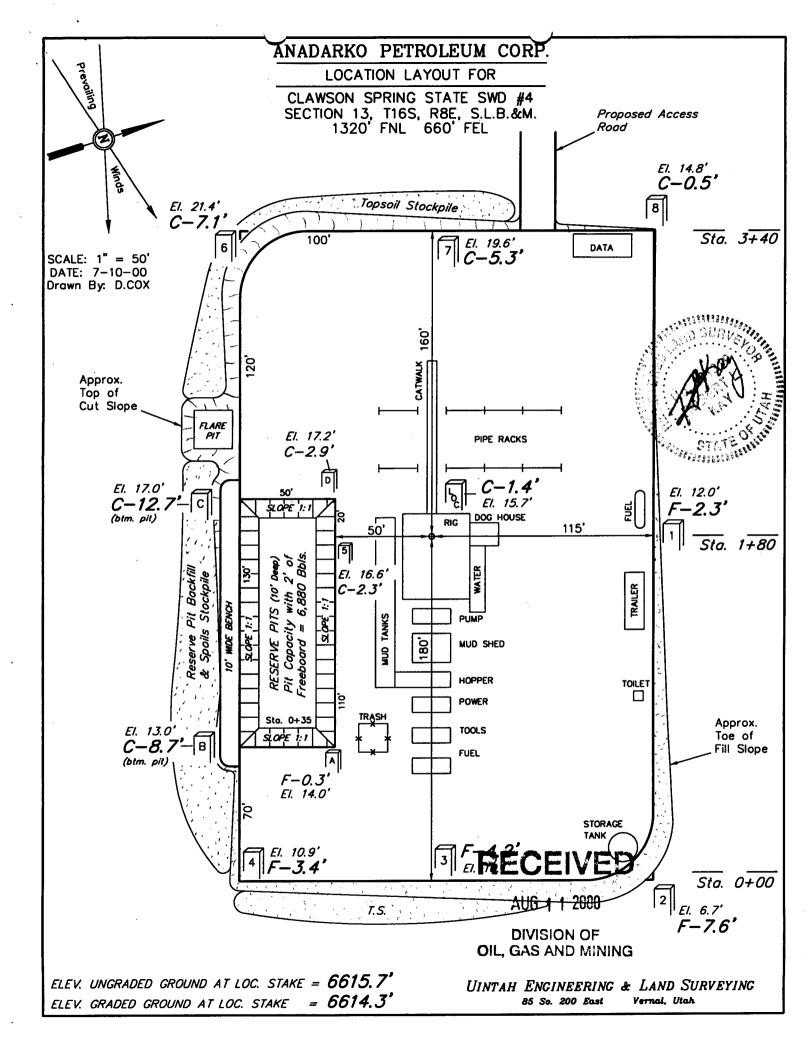
Uintah Engineering & Land Surveying S South 200 East Vernal, Utah 84078 435-789-1017 uels@uelsinc.com

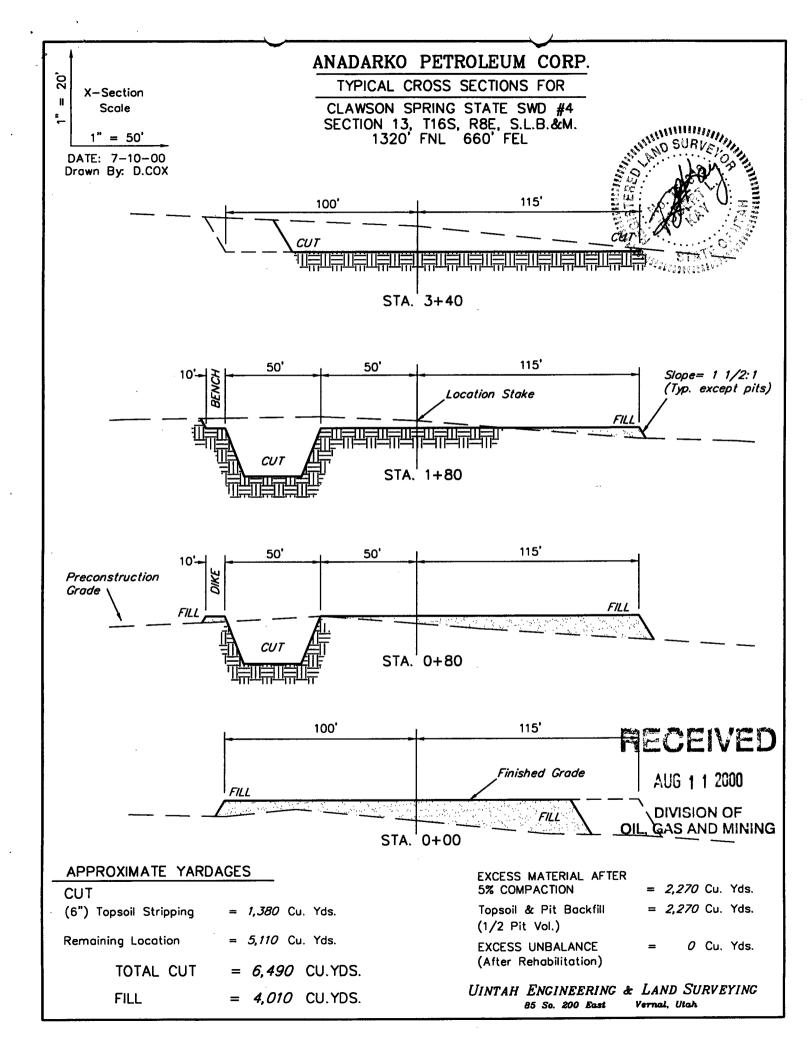
LOCATION PHOTOS

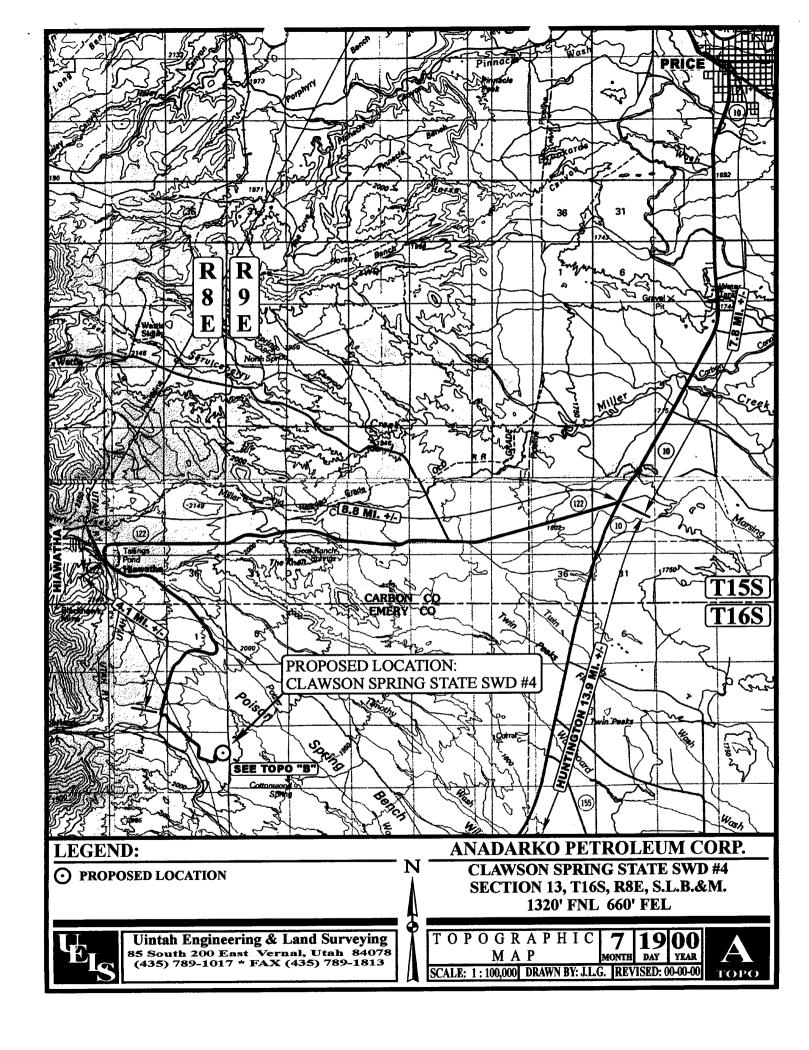
MONTH DAY YEAR

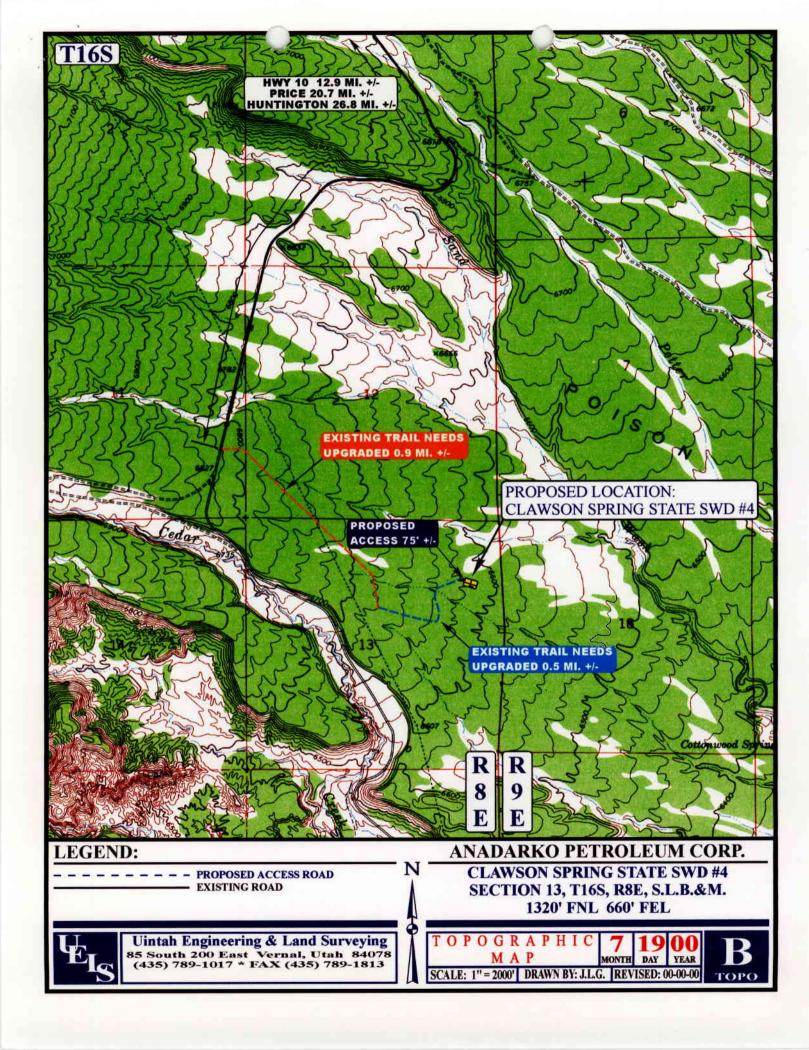
РНОТО

TAKEN BY: D.K. DRAWN BY: J.L.G. REVISED: 00-00-00



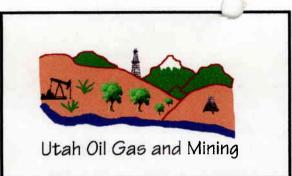






WORKSHEET APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 08/11/2000	API NO. ASSIGN	ED: 43-015-304	177
WELL NAME: CLAWSON SPRING ST SWD 4 OPERATOR: ANADARKO PETROLEUM CORP (N0035) CONTACT: JUDY DAVIDSON	PHONE NUMBER: 2	81-875-1101	
PROPOSED LOCATION:	INSPECT LOCATION	1 BY: /	/
NENE 13 160S 080E SURFACE: 1320 FNL 0660 FEL	Tech Review	Initials	Date
BOTTOM: 1320 FNL 0660 FEL EMERY	Engineering	pou	8-8-00
UNDESIGNATED (2)	Geology		
LEASE TYPE: 3-State	Surface		
LEASE NUMBER: ML-48217 SURFACE OWNER: 3-5+a+c			
PROPOSED FORMATION: NAVA			
RECEIVED AND/OR REVIEWED: #1at Bond: Fed[] Ind[] Sta[3] Fee[] (No. 203521) Potash (Y/N) Noil Shale (Y/N) *190 - 5 (B) Water Permit (No. PRWID) N RDCC Review (Y/N) (Date:) NA Fee Surf Agreement (Y/N)	Drilling Un Board Caus Eff Date: Siting:	Unit General Execution #54	
STIPULATIONS: 1) Production casing com onsing shoe by a minimum of 2) STATEMENT OF BA 3) INITIAL WATER CHE SHALL BE DETERMINED ZONE PRIOR TO COMPLE	ent shall co 200'. SIS MISTRY AND I FOR THE P		



OPERATOR: ANADARKO PETRO CORP (N0035)

FIELD: UNDESIGNATED (002)

SEC. 13, T16S, R8E,

COUNTY: EMERY SPACING: R649-3-3

		CLAWSON SPRING ST B-4		
115	CLAWSON SPRING ST B-6	T16S R8E MILLER CREEK ST C-1 CLAWSON SPRING ST C-2	T16S R9E CLAWSONSPRING ST E-5 * UTAH 07-351 T	50
A-1	CLAWSON SPRING ST B-9 ** ** ** ** ** ** ** ** **	12 CLAWSON SPRING ST B-5 CLAWSON SPRING ST C-3	UTAH 07-352 CLAWSON SPRING ST E-6	3
	CLAWSON SPRING ST C-6 (*) CLAWSON SPRING ST C-4	CLAWSON SPRING ST H-2 CLAWSON SPRING ST H-1 CLAWSON SPRING ST SWD 4 (NAV INJ INTERVAL)	UTAH 18-371 ★ UTAH 18-372	
	③ CLAWSON SPRING ST C-5	CAUSE 243-1 / 160' FRSD PZ	③ UTAH 18-374	
	CLAWSON SPRING ST C-15	24 ⊕ CLAWSON SPRING ST C-17	€ UTAH 19-3	377
	● CLAWSON SPRING ST C-14	€ CLAWSON SPRING ST C-16		

سملهمين



Prom the Desk of:
Dave Kapple - Drilling Engineer
Anadarka/UPR Petroleum Corporation
17001 Northchase Drive
Houston, Texas 77060

Office: (281)-876-8347

Pax #: (281) 876-8650

VIA: PAX #: 801-359-3940

Comments:

Can be granted today
Thanks for the immediate
attention.

FORM 9 STATE OF UTAH DIVISION OF OIL. GAS AND MINING 5, Lesse Designation and Serial Number ML-48217 6. Indian, Allottee or Tribe Name: SUNDRY NOTICES AND REPORTS ON WELLS 7. Unit Agreement Name: Do not use this form for proposale to drill new wells, despen existing wells, or to reenter plugged and abandoned wells.

Use APPLICATION FOR PERMIT TO DRILL OR DEEPEN form for such purposes 8. Well Name and Number; 1. Type of Well: OTHER: coalbed methane Clawson Spring OL 🗌 GAS State SWD -4 9. API Well Number: 2. Name of Operator Anadarko Petroleum Corporation 10. Field and Pool, or Wildoat 3. Address and Telephone Number. Clawson Spring CBM 17001 Northchase Dr., Houston, Texas 77060 (832) 601-3093 4. Location of Wall 1320' FNL & 660 FEL' Footages: County: Emery QQ,Sec., T., R., M.: State: UT Section 13, T16S, R8E CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA 11. NOTICE OF INTENT (Submit in Duplicate) SUBSECUENT REPORT (Submit Original Form Only) Abandon **New Construction** Abendon[®] **New Construction** Repair Casing Repair Casing Pull or Alter Casing Pull or Alter Casing Recomplete Change of Plans Perforate Change of Plans Perforate Vent or Flare Convert to Injection Convert to Injection Vent or Flare Fracture Treat or Acidize Fracture Treat or Acidize Water Shut-Off Water Shut-Off **Multiple Completion** Other_ Amended Casing/Cementing Program Date of work completion . Report results of Multiple Completions and Recompletic COMPLETION OR RECOMPLETION REPORT AND LOS form. Lipon Approval etione to different reservoirs on WELL Approximate date work will start __ * Must be accompanied by a coment verification report. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all perlinent details, and give pertinent dates. If well is directionally drifted, give subscurace locations and measured and true vortical depths for all markers and zones perlinent to this work.) Attached is the following: 1. Amended drilling plan with casing and cementing changes. 2. **BOP Schmatic** 3. Topo & Access Map & Area Map Pit & Pad Layout with cross cuts & fills. Utah 017 & Gas Lease Bond 224351 Utah Bond of Lessee 203521 Water Source - City of Price Surface Owner: SITLA Joy L. Rector 13. Lesto Date 09-08-00 Title Regulatory Coordinator Name & Signature (This space for State use only)



Drilling Plan To Accompany Application for Permit to Drill

Well: Clawson Spring State SWD-4

Lease; ML-48217

Location:

1320' FNL & 660' FEL Section 13, T16S, R8E Emery County, Utah Surface Elevation: 6616'

A. Estimated Tops of Important Geologic Markers:

Emery	Surface	Curtis	5416'
Bluegate Shale	2006'	Entrada	5 566 ′
Ferron Sand	3106'	Camel	6216'
Tununk Shale	3341'	Camel Anhy	6536"
Dakota Sand	3726'	Carmel Lime	6711'
Cedar Mtn.	3776'	Navajo	6931
Buckhorn Cong.	4436'	Kayenta	7271'
Morrison	4516'	Wingate	7351'
Sumerville	5016	•	

B. Estimated Depth at which Water, Oil, Gas or other mineral bearing zones is expected to be encountered:

Gas-bearing Ferron Sandstone Member is expected to be encountered from 3106' to 3726'.

All fresh water zones and prospectively valuable mineral zones encountered during drilling will be recorded by depth and adequately protected. All significant oil and gas shows will be tested to determine commercial potential.

C. Pressure Control Equipment:

An 11", 3000 pai WP double gate hydraulic BOP with pipe rams and bland rams will be installed on the 9 5/8" casinghead. In addition to the BOP stack, a rotating head will be installed on top of the BOP to assist in safe air drilling operations. The BOP stack will be tested prior to drilling below intermediate casing. The ram preventers will be tested to 70% of the working pressure of the casinghead. The annular will be tested to 50% of its working pressure. Operational checks will be made daily on trips. A BOP schematic is shown on Exhibit "A".

The BOP system will be consistent with API RP 53. Pressure tests will be conducted before drilling out from under all casing strings with are set and camented in place. Blowout preventer controls will be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned. Preventers will be inspected and operated at least daily to ensure good mechanical working order. This inspection will be recorded on the daily drilling report. Preventers will be pressure tested before drilling casing cement plug. The accumulator system will meet IADC guidelines concerning pump capacities, storage capacity and reservoir volume. Closing unit fluid volume will be sufficient to pre-charge the system to operating pressure plus 50% excess. One set of

controls will be in the doghouse on the rig floor and one set will be remote on the drilling pad.

Casing Program:

Surface Casing:

13 3/8", 48#, H40, STC new casing will be set at approximately

Intermediate Casing:

9 5/8", 40#, J-55, new casing will be set at approximately 3900' Assumed 5 TC

Production Casing:

7", 26#, N-80, LTC, new casing will be set at approximately

80501

Casing Design Factors:

The safety factors on the casing strings will equal or exceed the following values:

Collapse

1.0

Joint Strength

1.6

Burst

1.33

E. Coment Program:

Surface:

Cement will be circulated to the surface. Casing will be cemented with

approximately 420 cu. ft. (350 sxs., 15.6 ppg, 1.19 cf/sk of API Class G

cement.

Intermediate:

Cement will be raised to the surface casing using an API Class G lite weight cement lead volume of approximately 1660 c. ft. (432 sxs., 11.0 ppg, 3.84 cf/sk) and an API Class G tail cement volume of approximately 140 cu. ft. (120 sxs., 15.8 ppg, 1.15 cf/sk). Cement will be placed 200'

above shoe.

Production:

Casing will be cemented back to intermediate 9 5/8" casing using API Class H cement and a DV stage cementing collar with a two stage cement job. The actual cement volumes and DV stage cementing tool placement will be based upon actual depth and gauge determined from

open hole loga.

Additional additives will be used to retard the cement, accelerate the cement, control lost Circulation, or control fluid loss. All cementing will be done in accordance with API cementing practices.

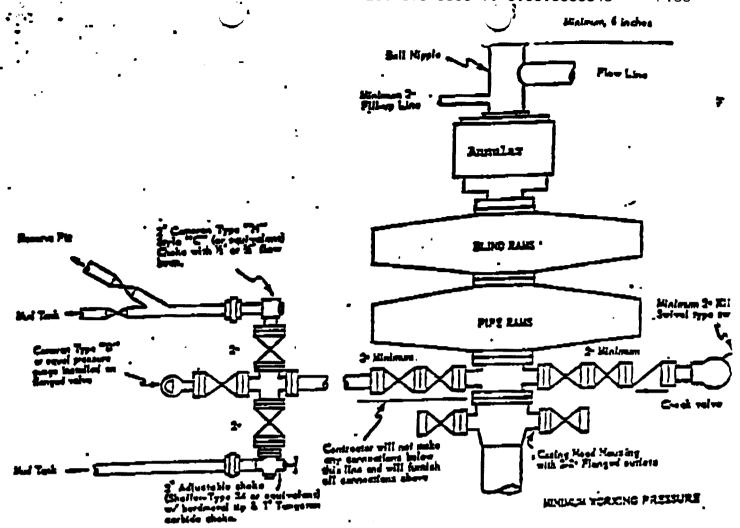
F. Mud Program and Circulating Medium:

A truck mounted air drilling rig will be used to drill the surface hole to 300' and to pre-set the surface casing before moving a drilling rig on location to drill the rest of the hole to TD.

An air or air/mist system will be used for drilling from below surface pipe at 300' to 3300'.

The hole will then be displaced with an 8.7 to 9.2 ppg Low Solids Non Dispersed mud. Bentonite gel will be the primary additive with minor additions of lime, caustic, soda ash, and polymer to control viscosity.

The mud/fluid system will be monitored visually and with a gas chromatograph detector.





MINIMUM SLOWOUT PREVENTER REQUIREMENTS - NORMAL PRISCIPE SERVICE



Michael O. Leavitt Governor Kathleen Clarke Executive Director John Kimball Division Director

Southeastern Region 475 West Price River Drive, Suite C Price, Utah 84501-2860 435-636-0260 435-637-7361 (Fax)

9 September 2000

Onsite Gas well Inspection - Anadarko Corporation

Clawson Springs State SWD#3: This area is within the big game winter range, therefore seasonal restrictions for construction and mitigation requirements should be followed.

Clawson Springs State SWD#4: This area is within the big game winter range, therefore seasonal restrictions for construction and mitigation requirements should be followed.

Clawson Springs State H-1: This area is within the big game winter range, therefore seasonal restrictions for construction and mitigation requirements should be followed.

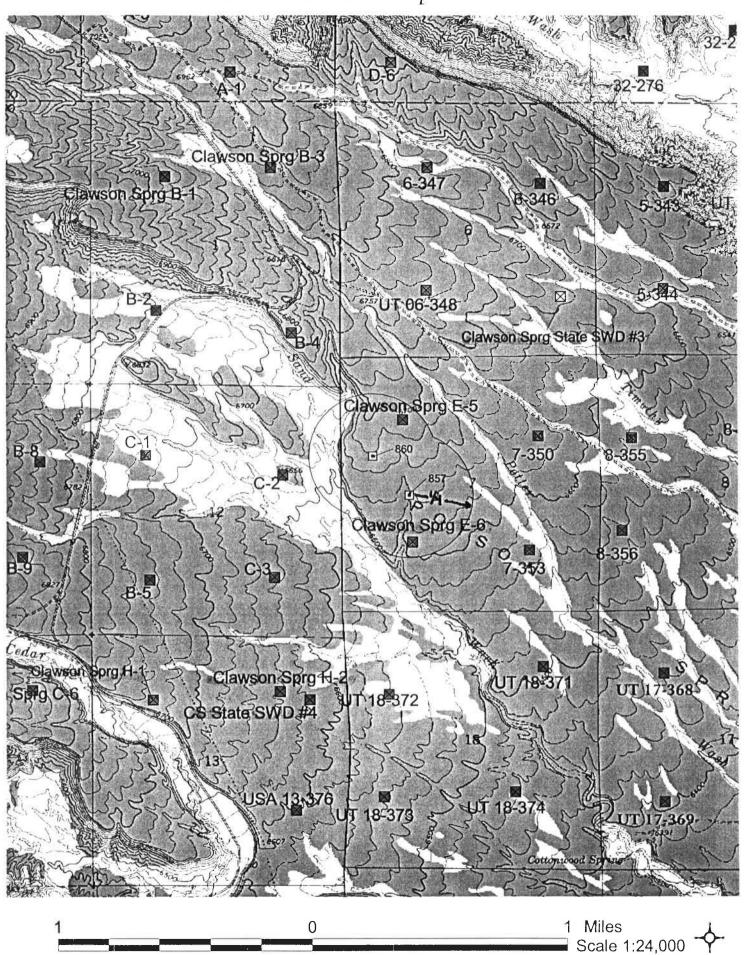
Clawson Springs State H-2: This area is within the big game winter range, therefore seasonal restrictions for construction and mitigation requirements should be followed.

Clawson Springs State E-5: The proposed well site is within ½ mile of two golden eagle nests; <1000' of #00-860 and <1600' of #00-857. These nests are within the same territory, and activity has alternated between nests, between years. It is our opinion that an exception could be granted to allow encroachment on these nests up to 1/4 mile, so long as the wells and their associated infrastructure are out of line of sight of the nest platforms. Due to the fact that these are tree nests low to the ground, we believe that they are more sensitive to disturbance than a nest high on a cliff escarpment. Therefore, we feel strongly that the wells and infrastructure not come within the 1/4 "exception" distance. Additionally, this area is within the big game winter range, therefore seasonal big game restrictions for construction and mitigation requirements should be followed.

Clawson Springs State E-6: The proposed well site is within ½ mile of two golden eagle nests; <1000' of #00-857 and <2000' of #00-860. These nests are within the same territory, and activity has alternated between nests, between years. It is our opinion that an exception could be granted to allow encroachment on these nests up to 1/4 mile, so long as the wells and their associated infrastructure are out of line of sight of the nest platforms. Due to the fact that these are tree nests low to the ground, we believe that they are more sensitive to disturbance than a nest high on a cliff escarpment. Therefore, we feel strongly that the wells and infrastructure not come within the 1/4 "exception" distance. Additionally, this area is within the big game winter range, therefore seasonal big game restrictions for construction and mitigation requirements should be followed.

Reviewer: Chris Colt, Habitat Biologist (In office review) c:DOGM, Anadarko, USFWS, SITLA

L NR On Site Inspections



Evaluation Ranking Criteria and Ranking Score For Reserve and Onsite Pit Liner Requirements

Site-Specific Factors	Ranking	Site Ranking
Distance to Groundwater (feet)		
>200	0	
100 to 200	5	
75 to 100	10	
25 to 75	15	_
<25 or recharge area	20	$ar{0}$
Distance to Surf. Water (feet)		
>1000	0	
300 to 1000	2	
200 to 300	10	
100 to 200	15	
< 100	20	<u>0</u>
Distance to Nearest Municipal Well (feet)		
>5280	0	
1320 to 5280	5	
500 to 1320	10	
<500	20	<u>0</u>
Distance to Other Walls (fact)		
Distance to Other Wells (feet)	0	
>1320	10	
300 to 1320	20	<u>0</u>
<300	20	<u> </u>
Native Soil Type		
Low permeability	0	
Mod. permeability	10	
High permeability	20	<u>10</u>
Fluid Type		
Air/mist	0	
Fresh Water	5	
TDS >5000 and <10000	10	
TDS >10000 or Oil Base Mud Fluid containing significant levels of	15	
hazardous constituents	20	
nazardono constitutiva		<u>o</u>
Drill Cuttings		
Normal Rock	0	
Salt or detrimental	10	<u>0</u>
Amnual Denoinitation (inches)		
Annual Precipitation (inches) <10	0	
10 to 20	5	
>20	10	<u>5</u>
A CO. and Day Andrews		
Affected Populations	0	
<10	6	
10 to 30	8	
30 to 50 >50	10	<u>o</u>
~3U	•	-
Presence of Nearby Utility Conduits	^	
Not Present	0	^
Unknown	10	<u>.</u> <u>0</u>
Present	15	

Final Score 15 (Level II Sensitivity)



Well name:

9-00 Anadarko SWD-4

Operator:

Anadarko

String type:

Surface

Location:

Carbon County

Project ID:

43-015-30477

Design parameters:

Collapse

Mud weight:

8.330 ppg

Design is based on evacuated pipe.

Environment: Minimum design factors:

Collapse: Design factor

1.125

H2S considered?

Surface temperature:

75 °F 79 °F Bottom hole temperature: 1.40 °F/100ft Temperature gradient:

Minimum section length:

300 ft

Burst:

Design factor

1.00

1.80 (J)

1.80 (J)

1.60 (J)

Cement top:

0 ft

No

Burst

Max anticipated surface

pressure: Internal gradient: Calculated BHP

0 psi

0.433 psi/ft 130 psi

No backup mud specified.

8 Round STC:

8 Round LTC:

Buttress: Premium:

Body yield:

Tension:

1.50 (J) 1.50 (B)

Tension is based on buoyed weight. 263 ft Neutral point:

Non-directional string.

Re subsequent strings: Next setting depth:

Next mud weight: Next setting BHP:

Fracture mud wt: Fracture depth: 3,865 psi Injection pressure

3,245 psi 19.250 ppg 3,865 ft

8.330 ppg

7,500 ft

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	300	13.375	48.00	H-40	ST&C	300	300	12.59	28.2
Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	130	740	5.70	130	1730	13.33	13	322	25.47 J

Prepared

Utah Dept. of Natural Resources

Date: September 8,2000 Salt Lake City, Utah

ENGINEERING STIPULATIONS: Production csg. cement top shall cover int. csg. shoe a min. of 200'. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension. Collapse is based on a vertical depth of 300 ft, a mud weight of 8.33 ppg The casing is considered to be evacuated for collapse purposes. Burst strength is not adjusted for tension.

Well name:

9-00 Anadarko SWD-4

Operator:

Anadarko

String type:

Intermediate

Project ID:

Location:

Carbon County

43-015-30477

Design parameters:

Collapse

Mud weight:

8.330 ppg

Design is based on evacuated pipe.

Minimum design factors:

Collapse: Design factor

1.125

Environment:

H2S considered?

75 °F Surface temperature: 130 °F Bottom hole temperature:

Temperature gradient: 1.40 °F/100ft

Minimum section length: 1,500 ft

Burst:

Design factor

1.00

Cement top:

Surface

No

Burst

1

Max anticipated surface

pressure:

0 psi

Internal gradient: Calculated BHP

0.433 psi/ft 1,688 psi

No backup mud specified.

Tension:

8 Round STC:

Buttress:

Premium: Body yield:

1.80 (J) 8 Round LTC: 1.80 (J)

> 1.60 (J) 1.50 (J)

1.50 (B)

Tension is based on buoyed weight.

Neutral point:

1688

3.417 ft

2.34

Re subsequent strings:

Non-directional string.

Next setting depth:

8,050 ft Next mud weight: 8.330 ppg 3,483 psi Next setting BHP:

Fracture mud wt: Fracture depth: Injection pressure

137

19.250 ppg 8,050 ft 8,050 psi

True Vert Measured Drift Internal End Segment Nominal Run Depth Diameter Capacity Depth **Finish** Weight Grade Length Size Seq (in) (ft³) (ft) (ft) (lbs/ft) (ft) (in) 310.2 3900 8.75 3900 ST&C 40.00 J-55 3900 9.625 1 **Tension Burst** Burst **Tension Tension** Collapse **Burst** Collapse Collapse Run Design Strenath Strength Design Load Strength Design Load Load Seq (Kips) **Factor** (Kips) **Factor** (psi) (psi) **Factor** (psi) (psi) 3.31 J 452

3950

Prepared

1688

Utah Dept. of Natural Resources

2570

1.52

Date: September 8,2000 Salt Lake City, Utah

ENGINEERING STIPULATIONS: Production csg. cement top shall cover int. csg. shoe a min. of 200'. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension. Collapse is based on a vertical depth of 3900 ft, a mud weight of 8.33 ppg The casing is considered to be evacuated for collapse purposes. Burst strength is not adjusted for tension.

Well name:

9-00 Anadarko SWD-4

Operator:

Anadarko

String type:

Production

Location:

Carbon County

Project ID:

43-015-30477

Design parameters:

Collapse

Mud weight:

9.200 ppg

Design is based on evacuated pipe.

Minimum design factors:

Collapse: Design factor

1.125

Environment:

H2S considered?

75 °F Surface temperature: 188 °F Bottom hole temperature:

Temperature gradient:

1.40 °F/100ft

Minimum section length:

Non-directional string.

368 ft

Burst:

Design factor

1.00

1.80 (J)

1.80 (J)

1.60 (J)

Cement top:

3.885 ft

No

Burst

Max anticipated surface

pressure:

0 psi 0.478 psi/ft

Internal gradient: 3,847 psi Calculated BHP

No backup mud specified.

Tension:

8 Round STC:

8 Round LTC:

Buttress:

Premium:

Body yield:

1.50 (J) 1.50 (B)

Tension is based on buoyed weight.

6.933 ft Neutral point:

Run Seq	Segment Length (ft) 8050	Size (in) 7	Nominal Weight (lbs/ft) 26.00	Grade N-80	End Finish LT&C	True Vert Depth (ft) 8050	Measured Depth (ft) 8050	Drift Diameter (in) 6.151	Internal Capacity (ft³) 422
Run Seq	Collapse Load (psi) 3847	Collapse Strength (psi) 5410	Collapse Design Factor 1.41	Burst Load (psi) 3847	Burst Strength (psi) 7240	Burst Design Factor 1.88	Tension Load (Kips) 180	Tension Strength (Kips) 519	Tension Design Factor 2.88 J

Prepared

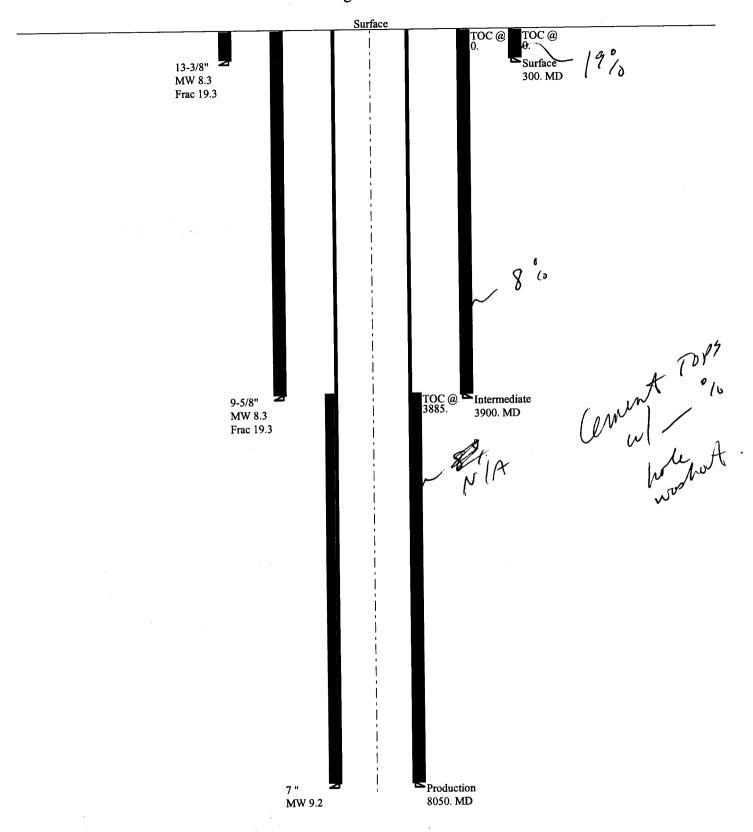
RJK

Utah Dept. of Natural Resources

Date: September 8,2000 Salt Lake City, Utah

ENGINEERING STIPULATIONS: Production csg. cement top shall cover int. csg. shoe a min. of 200'. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension. Collapse is based on a vertical depth of 8050 ft, a mud weight of 9.2 ppg The casing is considered to be evacuated for collapse purposes. Burst strength is not adjusted for tension.

9-00 Anadarko SWD-4 Casing Schematic



STATE OF UTAH

	5. Lease Designation and Serial Number ML - 48217
	6. Indian, Allottee or Tribe Name:
i .	7. Unit Agreement Name:
AL	8. Well Name and Number: Clawson Spring State SWD -4
	9. API Well Number: 43-015-30477
	10. Field and Pool, or Wildcat Clawson Spring CBM
	County: Emery State: UT
	01
QUENT	THER DATA REPORT Form Only)
	New Construction
	Pull or Alter Casing
	Perforate
	☐ Vent or Flare ☐ Water Shut-Off
	ecompletions to different reservoirs on WELL 0 LOG form.
erification	report.
lly drilled,	give subsurface locations and measured and true
	RECEIVED
	SEP 1 1 2000
	DIVISION OF OIL, GAS AND MINING
	00.00.00

SIAIL OF UIAII		
DIVISION OF OIL, GAS AND MIN	ING	5. Lease Designation and Serial Number
		ML-48217
SUNDRY NOTICES AND REPORTS OF	N WELLS	6. Indian, Allottee or Tribe Name:
Do not use this form for proposals to drill new wells, deepen existing wells, or to		7. Unit Agreement Name:
Use APPLICATION FOR PERMIT TO DRILL OR DEEPEN form	n for such purposes	
	CONCIDENTIAL	8. Well Name and Number:
Type of Well: OIL GAS OTHER: coalbed methane	CONFIDENTIAL	Clawson Spring State SWD -4
Name of Operator		9. API Well Number:
Anadarko Petroleum Corporation		43-015-30477
Address and Telephone Number.		10. Field and Pool, or Wildcat Clawson Spring CBM
17001 Northchase Dr., Houston, Texas 77060	(832) 601-3093	Cranson Spring Spr.
Location of Well		
Footages: 1320' FNL & 660 FEL'		County: Emery
QQ,Sec., T., R., M.: Section 13, T16S, R8E		State: UT
CHECK APPROPRIATE BOXES TO INDICATE NA	TURE OF NOTICE, REPORT, OR (OTHER DATA
NOTICE OF INTENT	SUBSEQUEN (Submit Origina	IT REPORT
(Submit in Duplicate)	(Japani Jilgini	
Abandon New Construction	Abandon*	New Construction
Repair Casing Pull or Alter Casing	Repair Casing	Pull or Alter Casing
Change of Plans Recomplete	Change of Plans	Perforate
Convert to Injection Perforate	Convert to Injection	Vent or Flare
Fracture Treat or Acidize Vent or Flare	Fracture Treat or Acidize	Water Shut-Off
Multiple Completion Water Shut-Off	Other	
Other Amended Casing/Cementing Program	Date of work completion	
pproximate date work will startUpon_Approval	Report results of Multiple Completions and COMPLETION OR RECOMPLETION REPORT A	Recompletions to different reservoirs on WELL
	* Must be accompanied by a cement verification	
DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and vertical depths for all markers and zones pertinent to this work.)	give pertinent dates. If well is directionally drilled	t, give subsurface locations and measured and tr
Attached is the following:		
 Amended drilling plan with casing and cement 	nting changes.	
2. BOP Schmatic		DECEIVED
3. Topo & Access Map & Area Map		RECEIVED
 Pit & Pad Layout with cross cuts & fills. 		0.55 4 4 2000
Utah Oil & Gas Lease Bond 224351		SEP 1 1 2000
Utah Bond of Lessee 203521		DIVISION OF
Water Source - City of Price Surface Own	er: SITLA	OIL, GAS AND MINING
Joy	L. Rector	
	ulatory Coordinator	Date 09-08-00
(This space for State use only)		
(This space for otate ase only)	A	pproved by the

COPY SENT TO OPERATOR Date: Initials

Utah Division of Oil, Gas and Mining

(See Instructions on Reverse Side)



Drilling Plan To Accompany Application for Permit to Drill

Well:

Clawson Spring State SWD-4

Lease: ML-48217

Location:

1320' FNL & 660' FEL Section 13, T16S, R8E Emery County, Utah Surface Elevation: 6616'

A. Estimated Tops of Important Geologic Markers:

Emery	Surface	Curtis	5416'
Bluegate Shale	2006'	Entrada	5566'
Ferron Sand	3106'	Camel	6216'
Tununk Shale	3341'	Camel Anhy	6536'
Dakota Sand	3726'	Carmel Lime	6711'
Cedar Mtn.	3776'	Navajo	6931'
Buckhorn Cong.	4436'	Kayenta	7271'
Morrison	4516'	Wingate	7351'
Sumerville	5016		

B. Estimated Depth at which Water, Oil, Gas or other mineral bearing zones is expected to be encountered:

Gas-bearing Ferron Sandstone Member is expected to be encountered from 3106' to 3726'.

All fresh water zones and prospectively valuable mineral zones encountered during drilling will be recorded by depth and adequately protected. All significant oil and gas shows will be tested to determine commercial potential.

C. Pressure Control Equipment:

An 11", 3000 psi WP double gate hydraulic BOP with pipe rams and bland rams will be installed on the 9 5/8" casinghead. In addition to the BOP stack, a rotating head will be installed on top of the BOP to assist in safe air drilling operations. The BOP stack will be tested prior to drilling below intermediate casing. The ram preventers will be tested to 70% of the working pressure of the casinghead. The annular will be tested to 50% of its working pressure. Operational checks will be made daily on trips. A BOP schematic is shown on Exhibit "A".

The BOP system will be consistent with API RP 53. Pressure tests will be conducted before drilling out from under all casing strings with are set and cemented in place. Blowout preventer controls will be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned. Preventers will be inspected and operated at least daily to ensure good mechanical working order. This inspection will be recorded on the daily drilling report. Preventers will be pressure tested before drilling casing cement plug. The accumulator system will meet IADC guidelines concerning pump capacities, storage capacity and reservoir volume. Closing unit fluid volume will be sufficient to pre-charge the system to operating pressure plus 50% exces

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controls will be in the doghouse on the rig floor and one set will be remote on the drilling pad.

D Casing Program:

Surface Casing:

13 3/8", 48#, H40, STC new casing will be set at approximately

300'.

Intermediate Casing:

9 5/8", 40#, J-55, new casing will be set at approximately 3900'

Production Casing:

7", 26#, N-80, LTC, new casing will be set at approximately

8050'

Casing Design Factors:

The safety factors on the casing strings will equal or exceed the following values:

Collapse

1.0

Joint Strength

1.6

Burst

1.33

E. **Cement Program:**

Surface:

Cement will be circulated to the surface. Casing will be cemented with

approximately 420 cu. ft. (350 sxs., 15.6 ppg, 1.19 cf/sk of API Class G

cement.

Intermediate:

Cement will be raised to the surface casing using an API Class G lite weight cement lead volume of approximately 1660 c. ft. (432 sxs., 11.0 ppg, 3.84 cf/sk) and an API Class G tail cement volume of approximately 140 cu. ft. (120 sxs., 15.8 ppg, 1.15 cf/sk). Cement will be placed 200'

above shoe.

Production:

Casing will be cemented back to intermediate 9 5/8" casing using API Class H cement and a DV stage cementing collar with a two stage cement job. The actual cement volumes and DV stage cementing tool placement will be based upon actual depth and gauge determined from

open hole logs.

Additional additives will be used to retard the cement, accelerate the cement, control lost Circulation, or control fluid loss. All cementing will be done in accordance with API cementing practices.

Mud Program and Circulating Medium: F.

A truck mounted air drilling rig will be used to drill the surface hole to 300' and to pre-set the surface casing before moving a drilling rig on location to drill the rest of the hole to TD.

An air or air/mist system will be used for drilling from below surface pipe at 300' to 3300'.

The hole will then be displaced with an 8.7 to 9.2 ppg Low Solids Non Dispersed mud. Bentonite gel will be the primary additive with minor additions of lime, caustic, soda ash, and polymer to control viscosity.

The mud/fluid system will be monitored visually and with a gas chromatog RECEIVED

G. Coring, Logging and Testing Program:

- a. The following logging program is planned:
 - 1. SDL-GR-CAL over prospective intervals (300' to 3900 & 390' to 8050')
 - 2. DIL-SP-GR-CAL over prospective intervals (390' to 8050')
- b. A mud logging unit with chromatograph will be used from approximately 1000' to TD.
- c. After production casing is installed, a cement bond will be run to determine the top of cement. Productive zones will then be perforated and tested. Water produced during testing will be contained in the temporary reserve pit.

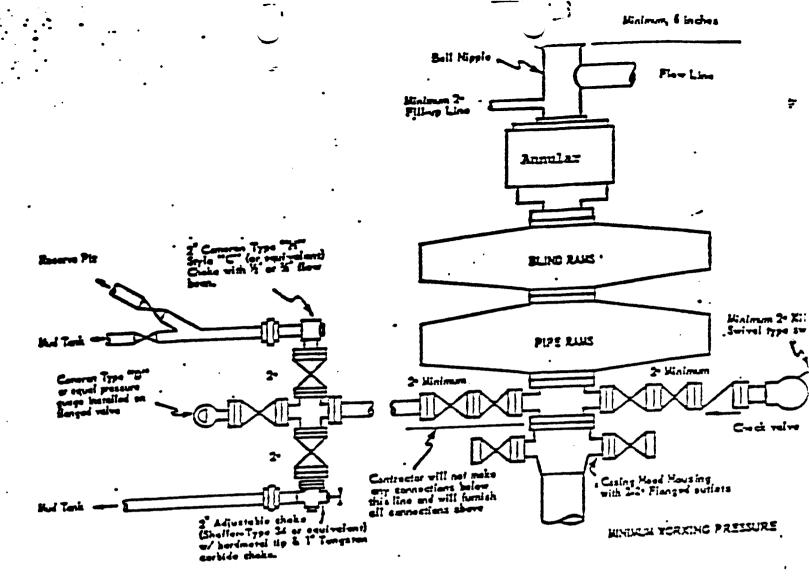
H. Abnormal Conditions and Potential Hazards:

Abnormal conditions such as abnormal temperatures or pressures are not anticipated. Potential hazards such as H2S are also not anticipated.

(drilling pln SWD utah.doc)

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DIVISION OF OIL, GAS AND MINING

MINIMUM BLOWOUT PREVENTER
REQUIREMENTS - NORMAL
PRESSURE
SERVICE

ANADARKO PETROLEUM CORP.

CLAWSON SPRING STATE SWD #4
LOCATED IN EMERY COUNTY, UTAH
SECTION 13, T16S, R8E, S.L.B.&M.

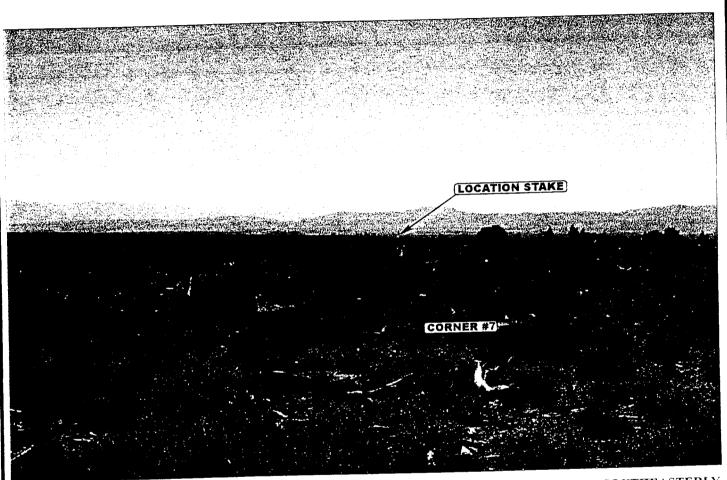


PHOTO: VIEW FROM CORNER #7 TO LOCATION STAKE

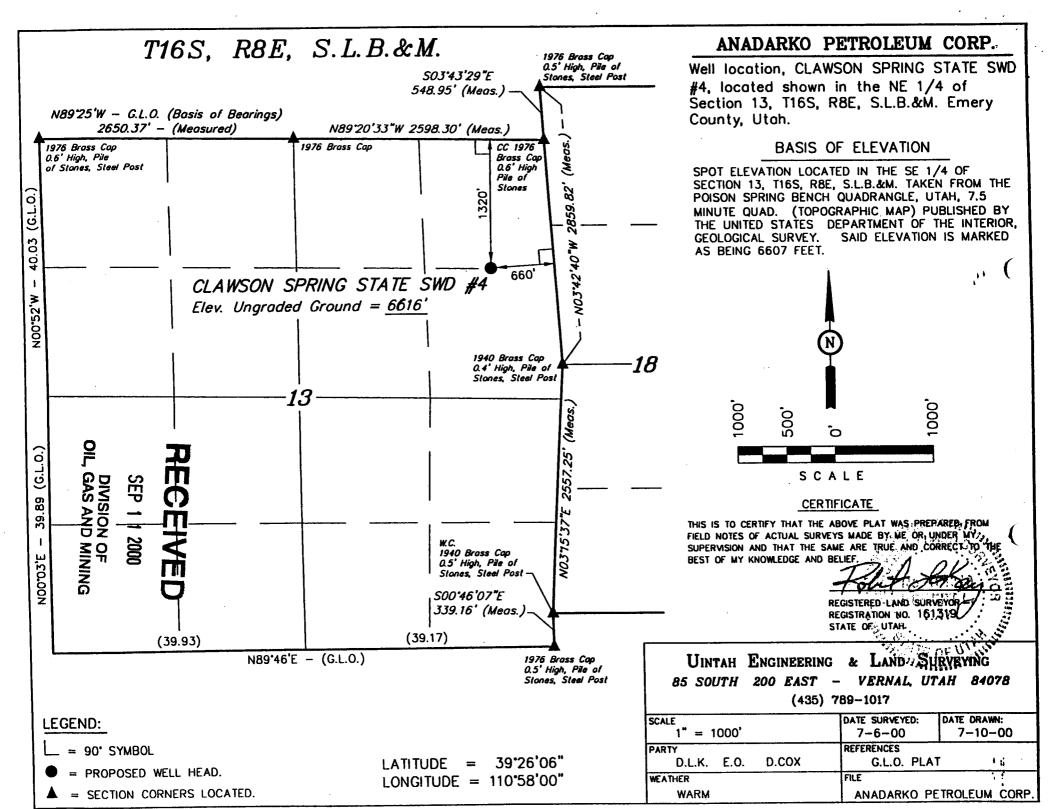
CAMERA ANGLE: SOUTHEASTERLY

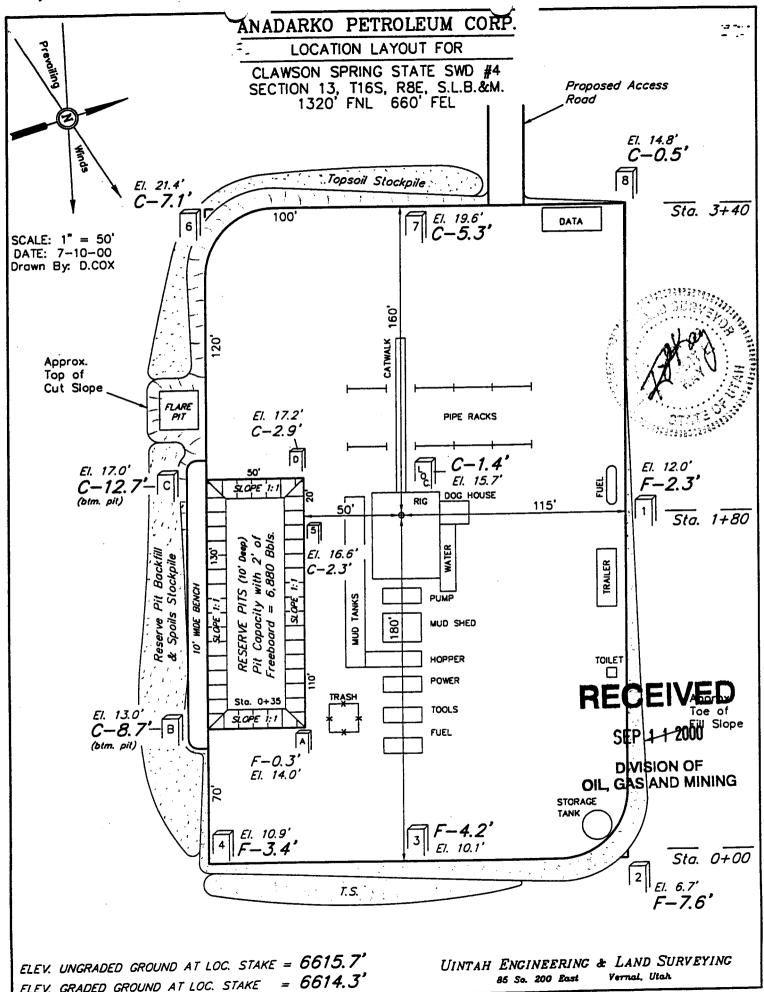
РНОТО



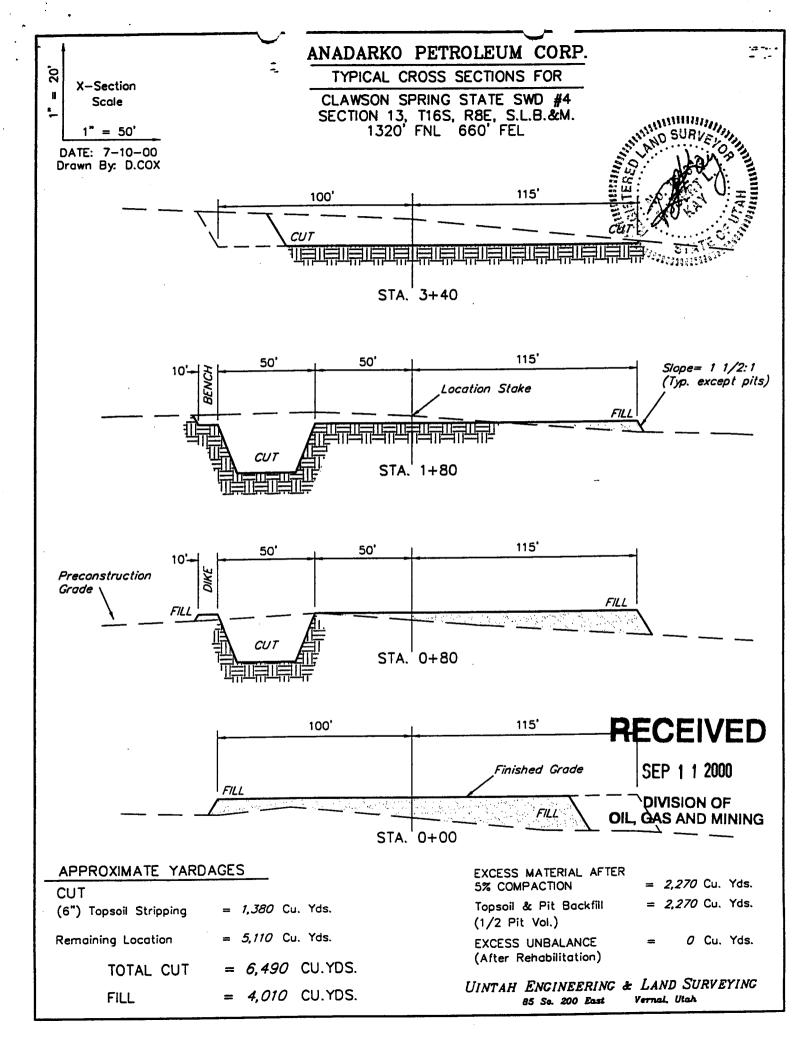
Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
435-789-1017 uels@uelsinc.com

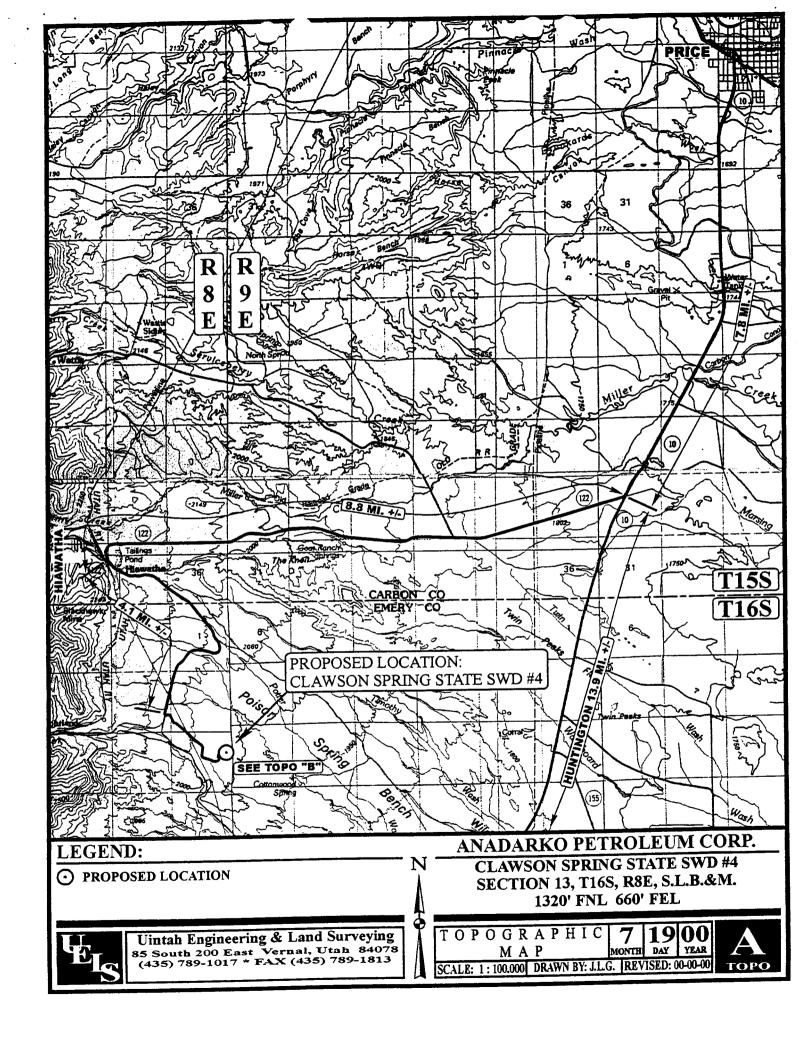
LOCATION PHOTOS TAKEN BY D.K. DRAWN BY J.L.C		7 MONTH	19 DAY	OO YEAR
TAKEN BY D.K.	DRAWN BY: J.L.	G. REV	VISED: 00-00-00	

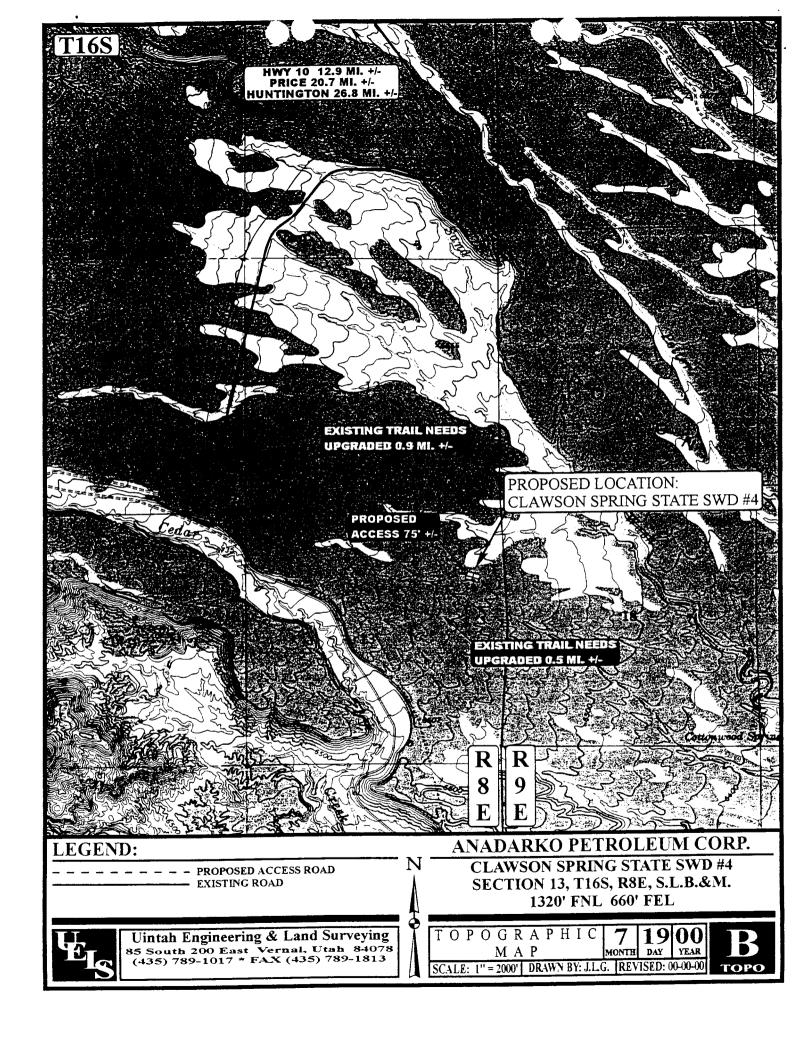




ELEV. GRADED GROUND AT LOC. STAKE = 6614.3'







DIVISION OF OIL, GAS AND MINING APPLICATION FOR PERMIT TO DRILL STATEMENT OF BASIS

Operator Name: Anadarko Petroleum Corporation

Name & Number: Clawson Spring State SWD-4

API Number: 43-015-30477

Location: 1/4,1/4 Sec. <u>13</u> T. <u>16 S</u> R. <u>8 E</u> County: <u>Emery</u>

Geology/Ground Water:

It is not expected that aquifers containing significant volumes of high quality ground water will be penetrated. A moderately permeable soil is developed on Quaternary / Tertiary Pediment Mantle covering the Blue Gate Shale Member of the Mancos Shale. The Emery Sandstone Member of the Mancos Shale is likely in the subsurface at this location and may contain a minor ground water resource. The proposed casing and cementing programs should adequately isolate any zones of fresh water that may be penetrated but the operator must extend the surface casing setting depth as needed to completely contain all Emery Sandstone Member strata. This well may penetrate upper, middle and lower Emery Sandstone Member strata. Emery Sandstone Member stratigraphy is not well documented in this obscured transitional area and may contain a ground water resource.

Reviewer: Christopher J. Kierst Date: 9/12/2000

Surface:

Five stock watering / irrigation points of diversion are documented along Cedar Creek within 1 mile of the location. The nearest moving surface waters are in Cedar Creek ~½ miles southwest.

Surface water may be found at Cottonwood Spring ~1½ miles southeast. There are no nearby culinary or irrigation water supply wells. The site was photographed and characterized on 9/8/2000. Provision was made to ensure site rehabilitation, litter and waste control, preservation of drainage patterns and the integrity of local infrastructure, groundwater and other resources. The surface is stable. Well utilities and portions of the water gathering system will follow the approach roadway. There are no wildlife issues besides winter drilling restrictions from December 1st to April 15th of each year. The operator has elected to abide by those restrictions unless the Division of Wildlife Resources grants an exemption or waiver. Precipitation will be diverted around the location into the existing gullies and berms will be established to keep pollutants from entering or leaving the well pad.

Reviewer: Christopher J. Kierst Date: 9/12/2000

Conditions of Approval/Application for Permit to Drill:

- 1. A 12-mil minimum thickness synthetic pit liner is required.
- 2. Berms and diversions to protect the location and spoil piles and control erosion and pollution.
- 3. Dust suppression while air drilling.
- 4. Surface casing will be set through all Emery Sandstone Member strata.
- 5. Site infrastructure placement as per drilling location plat.
- 6. Review for cross country-gathering system plans with Mark Page of Division of Water Rights.

ON-SITE PREDRILL EVALUATION Division of Oil, Gas and Mining

OPERATOR: Anadarko Petroleum Corporation

WELL NAME & NUMBER: Clawson Spring State SWD-4

API NUMBER: 43-015-30477

 LEASE: State ML-48217
 FIELD/UNIT: Clawson Spring (Proposed)

 LOCATION: 1/4,1/4
 Sec 13
 TWP: 16 S RNG: 8 E 1320 FNL 660 FEL

 LEGAL WELL SITING: 'F SEC. LINE; 'F 1/4,1/4 LINE; FANOTHER WELL.

GPS COORD (UTM): X = 502,827 E; Y = 4,364,866 N Calculated SURFACE OWNER: State

PARTICIPANTS

Mike Hebertson & Chris Kierst, (DOGM), Jim Hartley (Anadarko), David Kay, Brent Preece (Uintah Engineering), and Bryant Anderson (Emery County). Chris Colt (DWR) and Ed Bonner (SITLA) were informed of the proceedings but unable to attend.

REGIONAL/LOCAL SETTING & TOPOGRAPHY

This area is on Western margin of Colorado Plateau. The location is ~2 ½ miles east of the foot of the Wasatch Plateau on Poison Spring Bench. It is ~0.5 mile northeast of Cedar Creek and 0.5 mile southwest of Sand Wash.; ~1 ½ mile northwest of Cottonwood Spring. The pad is on pinyon / juniper forested alluvial ground which gently slopes to southeast. Small dry washes pass by within several hundred feet on the southwest. These drain southeast into Sand Wash. The road to Hiawatha UT is about ½ mile southwest and Hiawatha UT is ~3 ½ miles northwest. Mohrland UT is ~2 ¾ miles west.

SURFACE USE PLAN

CURRENT SURFACE USE: Grazing and wildlife habitat.

PROPOSED SURFACE DISTURBANCE: <u>The operator proposes 340 X 215' pad, outboard soil</u> storage, a 50' X 130' X 10' inboard pit, ~0.9 miles of upgrade to extant trail and 75' of new access road.

LOCATION OF EXISTING WELLS WITHIN A 1-MILE RADIUS: 8 NEW status (5 River Gas and 3 Anadarko) and 3 DRL status Anadarko CBM production locations.

LOCATION OF PRODUCTION FACILITIES AND PIPELINES: ~5 ½ miles east of the pad (Questar pipeline runs north-south). All utilities except some portions of the gathering system will follow the existing road or new access road. The injection water gathering system will be deployed cross country and will need rights of way from SITLA and Water Rights 404 Dredge and Fill review. Production facilities include a pumpjack, separator enclosure, casing and tubing strings, well head, telemetry equipment and transformer.

SOURCE OF CONSTRUCTION MATERIAL: Gravel location and approach road; soil stored in berm, the location will be made of natural material borrowed from leveling the pad during construction.

ANCILLARY FACILITIES: none

WASTE MANAGEMENT PLAN:

Portable toilets; garbage cans on location will be emptied into centralized dumpsters which will be emptied into an approved landfill. All human waste generated at the site will be kept in proper sanitary facilities and disposed of according to local rules. A waste management program has been filed for the year 2000 drilling season however it is written to cover production and is not sufficient to cover the drilling phase of operations. Extra precautions will be taken due to the proximity of Sand Wash.

ENVIRONMENTAL PARAMETERS:

AFFECTED FLOODPLAINS AND/OR WETLANDS: None - the area drains to intermittent Sand Wash, below Cottonwood Spring, which flows into Desert Lake Wash and eventually into the Price River, ~17 miles to the east.

FLORA/FAUNA: Pinyon, juniper, sagebrush, grasses, cactus, birds, lizards, coyotes, rodents, raptors, occasional elk and deer (critical winter range). The area was chained by the BLM in the late 60's.

SOIL TYPE AND CHARACTERISTICS: Sandy, silty, moderately permeable soil developed on Quaternary / Tertiary Pediment Mantle covering the Blue Gate Shale Member of the Mancos Shale. (GP-SP-ML)

SURFACE FORMATION & CHARACTERISTICS: <u>Quaternary / Tertiary Pediment Mantle overlying the upper portion of the Blue Gate Shale or Emery Sandstone Members of Mancos Shale; light gray, bentonitic shale and sandstone ledges.</u>

EROSION/SEDIMENTATION/STABILITY: Stable.

PALEONTOLOGICAL POTENTIAL: None observed.

RESERVE PIT

CHARACTERISTICS: Dugout, earthen pit, as above.

LINER REQUIREMENTS (Site Ranking Form attached): Synthetic liner is required.

SURFACE RESTORATION/RECLAMATION PLAN

As per State surface agreement.

SURFACE AGREEMENT: Agreement filed with State.

CULTURAL RESOURCES/ARCHAEOLOGY: Archaeological survey completed and on file with State.

OTHER OBSERVATIONS/COMMENTS:		
A TOTAL CITIE AT NITTO		

ATTACHMENTS:

4 Photographs taken.

<u>Christopher Kierst</u> DOGM REPRESENTATIVE

9/8/2000 / 2:40 PM DATE/TIME Michael O. Leavitt Governor Kathleen Clarke Executive Director Lowell P. Braxton Division Director

1594 West North Temple, Suite 1210 PO Box 145801 Salt Lake City, Utah 84114-5801 801-538-5340 801-359-3940 (Fax) 801-538-7223 (TDD)

September 14, 2000

Anadarko Petroleum Corporation 17001 Northchase Dr Houston, TX 77060

Re:

Clawson Spring State SWD-4 Well, 1320' FNL, 660' FEL, NE NE, Sec. 13, T. 16 South,

R. 8 East, Emery County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann.§ 40-6-1 et seq., Utah Administrative Code R649-3-1 et seq., and the attached Conditions of Approval, approval to drill the referenced well is granted.

Appropriate information has been submitted to DOGM and administrative approval of the requested exception location is hereby granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-015-30477.

Sincerely,

John R. Baza

Associate Director

er

Enclosures

cc:

Emery County Assessor

SITLA

Operator:	Anadarko Petroleum Corporation		
Well Name & Number	18 18 7 18 2	Clawson Spring State SWD-4	
API Number:		43-015-30477	
Lease:		ML-48217	
Location: <u>NE NE</u>	Sec. 13	T. 16 South R. 8 East	

Conditions of Approval

1. General

Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

2. Notification Requirements

The operator is required to notify the Division of Oil, Gas and Mining of the following actions during drilling of this well:

- 24 hours prior to cementing or testing casing
- 24 hours prior to testing blowout prevention equipment
- 24 hours prior to spudding the well
- within 24 hours of any emergency changes made to the approved drilling program
- prior to commencing operations to plug and abandon the well

The following are Division of Oil, Gas and Mining contacts and their work telephone numbers (please leave a voice mail message if the person is not available to take the call):

- Dan Jarvis at (801) 538-5338
- Robert Krueger at (801) 538-5274 (plugging)
- Carol Daniels at (801) 538-5284 (spud)

3. Reporting Requirements

All required reports, forms and submittals will be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

- 4. Compliance with the State of Utah Antiquities Act forbids disturbance of archeological, historical, or paleontological remains. Should archeological, historical or paleontological remains be encountered during your operations, you are required to immediately suspend all operations and immediately inform the Trust Lands Administration and the Division of State History of the discovery of such remains.
- 5. Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis. (Copy Attached)
- 6. Production casing cement shall cover intermediate casing shoe by a minimum of 200 feet.
- 7. Initial water chemistry and formation pressure shall be determined for the proposed injection zone prior to completion.

DIVISION OF OIL, GAS AND MINING

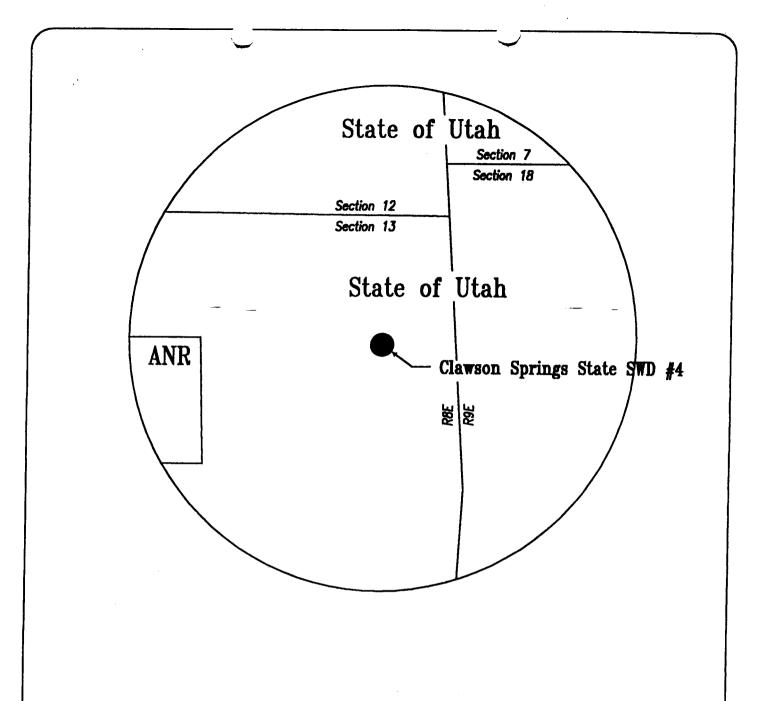
CONFIDENTIAL

SPUDDING INFORMATION

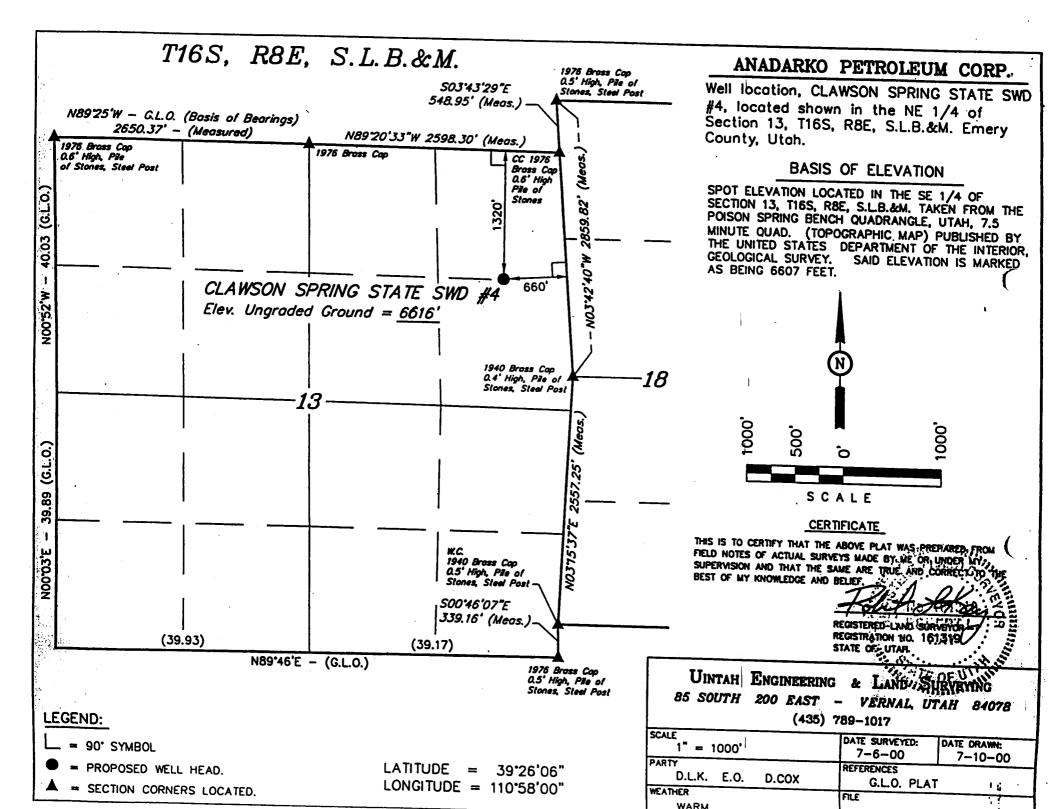
Name of Company: ANADARI	CO PETROL	EUM CORP	
Well Name: CLAWSO	N SPRING S	ST SWD-4	
Api No 43-015-30477	LEAS	SE TYPE:	STATE
Section 13 Township 16S F	ange <u>08F</u>	County	EMERY
Drilling Contractor		R	IG#
SPUDDED:			
Date 09/20/2000			
Time 9:00 AM	_		
HowDRY			
Drilling will commence			
Reported by HARLAN COL	LIER		
Telephone # 1-435-636-9000			
Date 09/21/2000	Signed:	CHD	

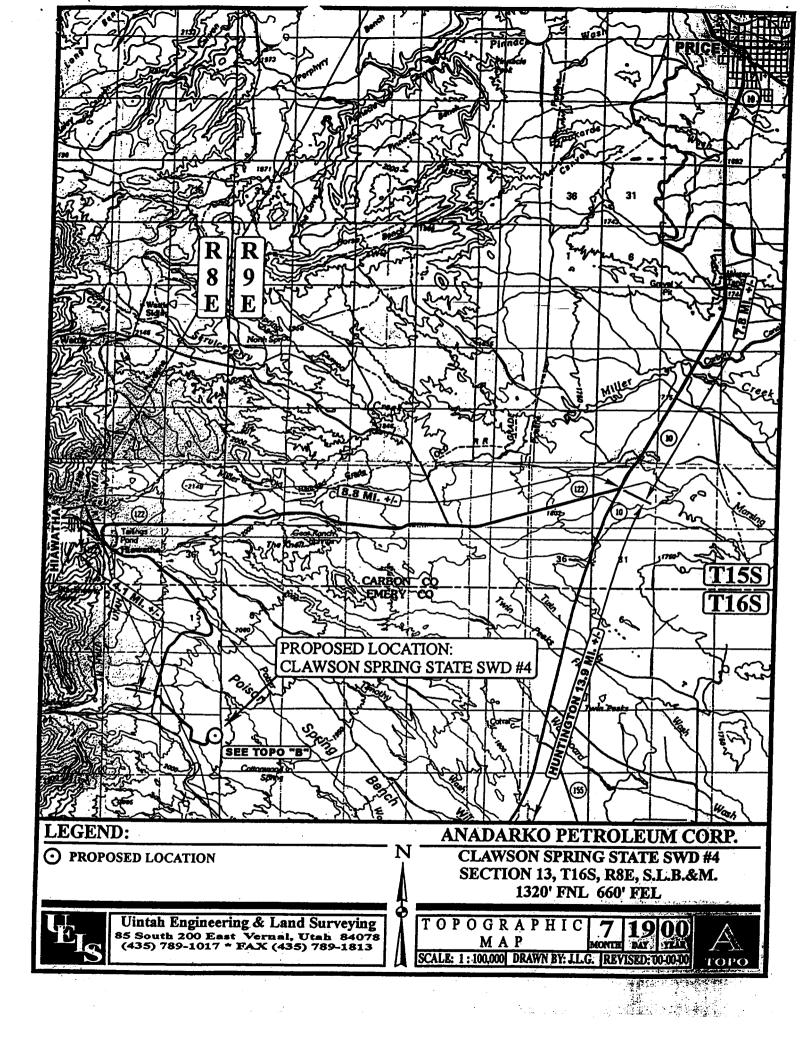
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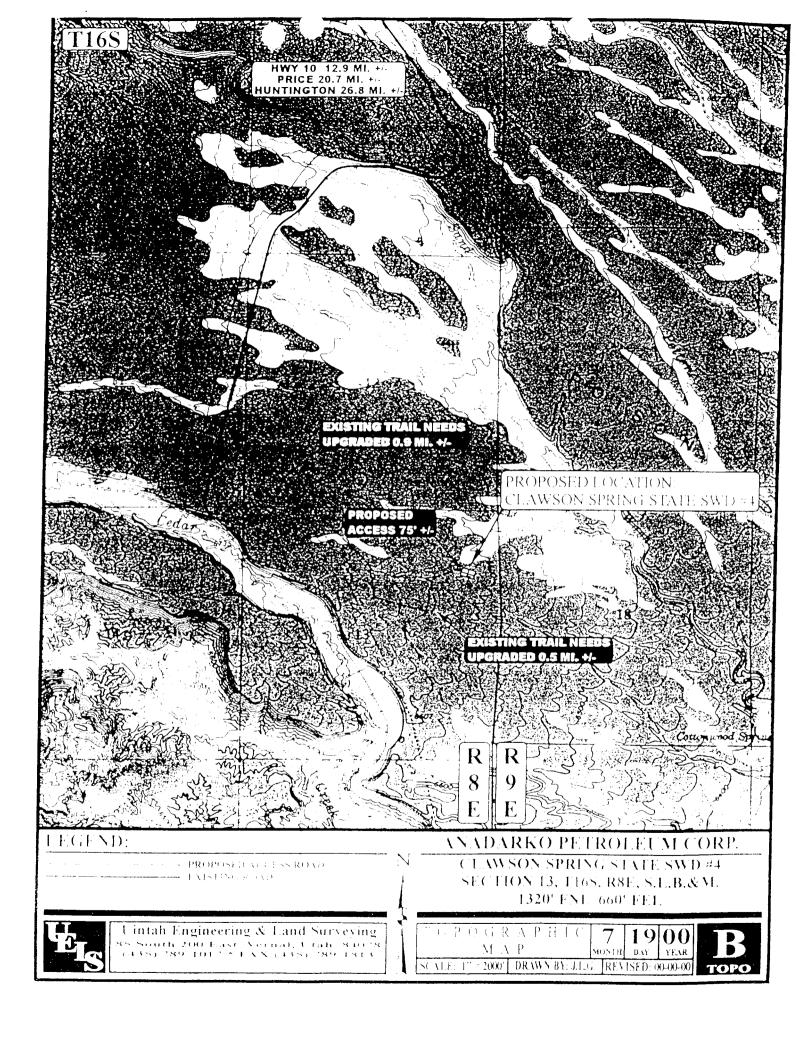
APPI	LICATION FO	R INJECTION W	=1 (
Name of Operator		Utah Account Number	· ·	
Anadarko Petroleum Corporation		N	Well Name and Number	
Address of Operator		Phone Number	Clawson Sorings State	SWD-4
60 South 700 East, Unit 1, Price, Utah	84501		VLI MILITOR	
Location of Well	.04301	435-637-3044	43-015-30477	
Footage:			Field or Unit Name	
1320 FNT, 660 F	a ,	County:	Clawson Sorings	
QQ, Section, Township, Range: E/2 NE/4, Sec.	 13. T16S. R8E	Emery State: UTAH	Lease Designation and Number ML – 4 8217	
			MD-4621/	
				_
Is this application for expansion of an existing projection	ct?	Yes 🗓	No 🗍	
Will the proposed well be used for: Enha				
Enna	nced Recovery?	Yes 🔲	No 🔀	
Dispo	osal?	Yes X	No 🗍	
Stora	ge?			
		Yes 🗌	No 🔀	
In Abia and Prof.				
Is this application for a new well to be drilled?		Yes 🔀	No 🗍	
Date of test:pending				·
Proposed injection interval: from7300 '	to <u>782</u>	25 '	Upper Navajo Bench 7300' – Middle Navajo A 7435' – Middle Navajo B 7515' – Lower Navajo 7600' –	7500' 7565'
Proposed maximum injection: rate 14,000 h	pressure .	1,400 psig	Kayenta 7665' – Wingate 7750' –	7715'
Proposed injection zone contains oil \square , gas \square , and i	or fresh water	within 1/2 mile of the we	II.	
st of attachments: Surface Ownership Plat,	Civil Plat and	Topographic Maps		
				
ATTACH ADDITION	AL INFORMATION	AS REQUIRED BY CL	IRRENT	
UTAH OIL AND	GAS CONSERV	ATION GENERAL RUL	ES .	
reby certify that this report is true and complete to impleet of my knowled.			•	
# 17	ge.			
ame (Please Print)	-	Tida Ed.13 *		
(The state of the		TitleField I	OK GIRTI	
gnature Jim Hartley		Date 0 -	20-0-0	
- L		,		



DSH	Talon Resources, Inc. 375 South Carbon Ave.
LWJ	375 South Carbon Ave.
10/18/00	Price, Utah
1"=1000'	Phone (435) 6378781 Fax (435)6368603
197	
T. A	ANADARKO Petroleum Corporation
Ll	Section 13, T168, R&E, SLB&M
	Surface Consensity Plat - SED-4



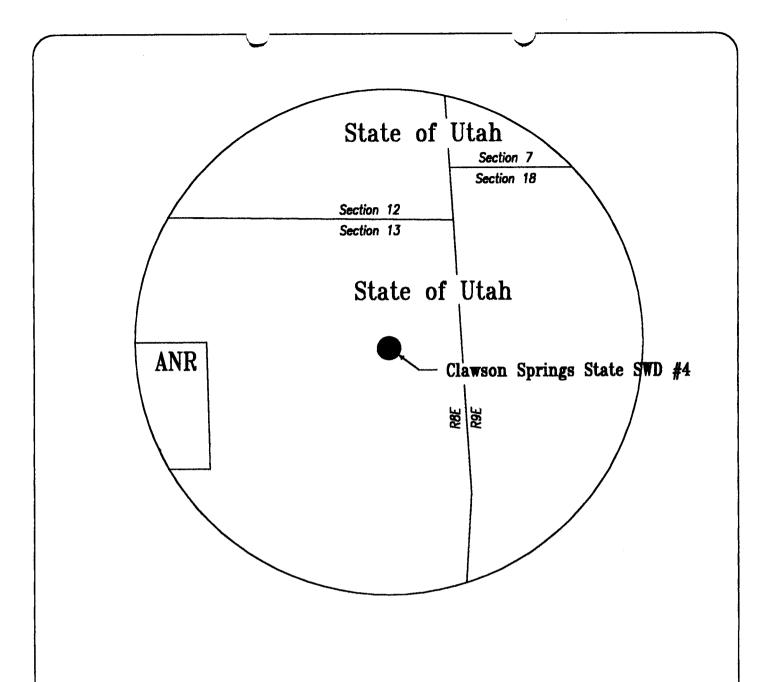


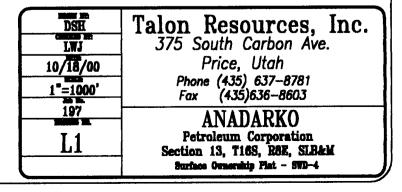


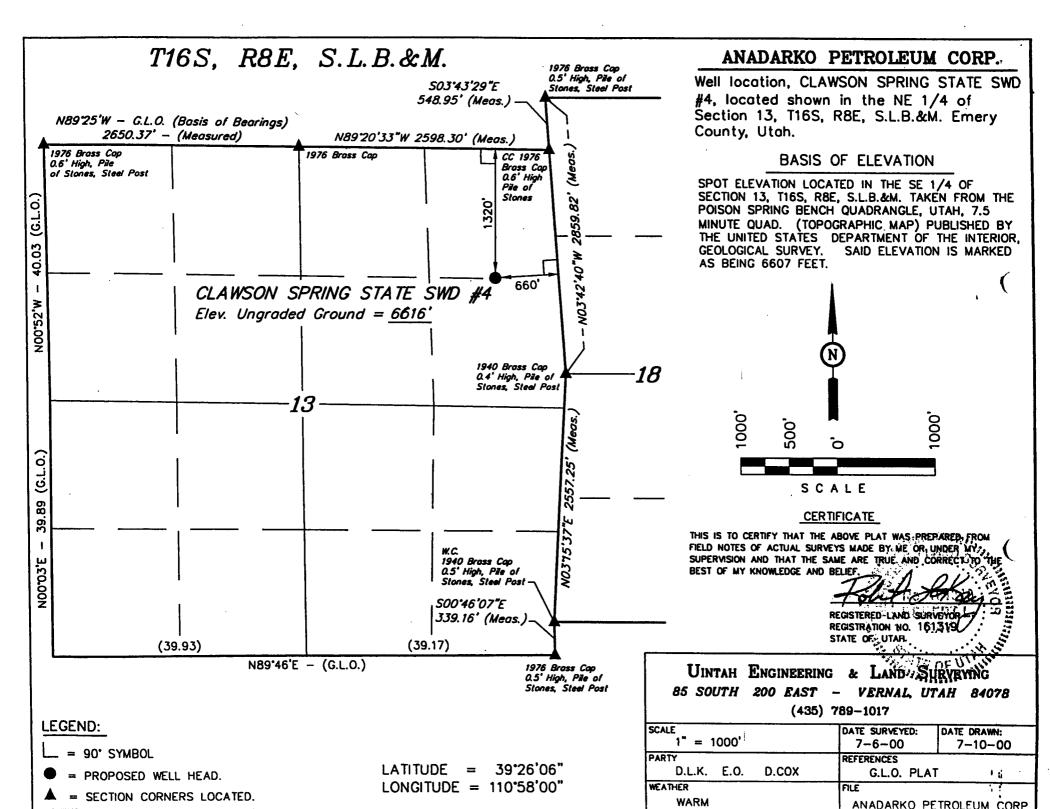
STATE OF UTAH

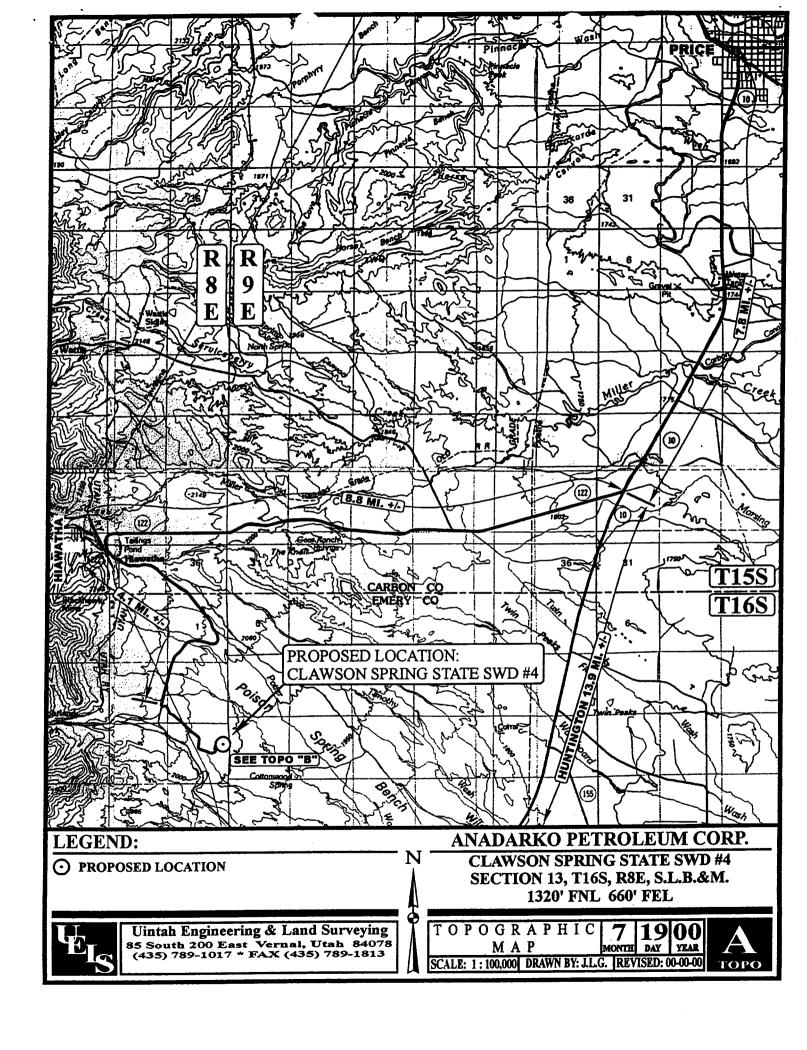
DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING

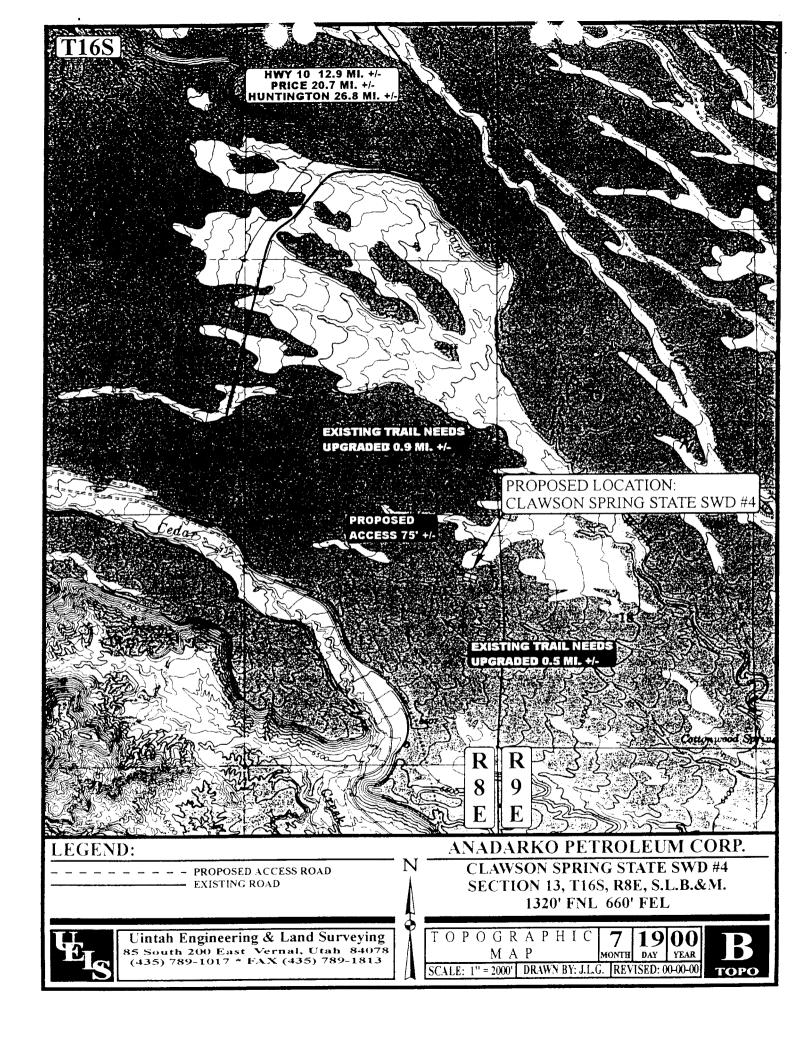
Name of Operator	APPLICATION F	OK INSECTION ME	LL	
•		Utah Account Number	Well Name and Numb	ber
Anadarko Petroleum Corporation Address of Operator		N	Clawson Springs	State SWD-4
•	 . •	Phone Number	API Number	
60 South 700 East, Unit 1, Price,	Utah 84501	435-637-3044	43-015-30477	
-			Field or Unit Name	
Footage: 1320 FNL	.660' FEL	County: Emery	Clawson Springs Lease Designation an	d Number
QQ, Section, Township, Range: E/2 NE/4		E State: UTAH	ML - 48217	a radinbet
Is this application for expansion of an exist	ting project?	Yes 🗓	No 🗌	
Will the proposed well be used for:	Enhanced Recovery	? Yes 🗍	No X	
	Disposal?	Yes 🔀	= 1	
	•	_	No 📋	
	Storage?	Yes 🗌	No X	
			_	
Is this application for a new well to be drille	d?	Yes X	No 🗌	
f this application is for an existing well, has	a casing test been perfe	ormed? Yes	No 🗍	
Date of test: pending	a sasing tool been pene	miled: Tes 🗀	No L	
				70001 7000
Proposed injection interval: from Proposed maximum injection: rate	7300¹ to	7825 ·	Upper Navajo Bench Middle Navajo A Middle Navajo B Lower Navajo Kayenta	7300' - 7390 7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
_			Middle Navajo A Middle Navajo B Lower Navajo	7435' 7500 7515' 7565 7600' 7645
roposed maximum injection: rate	14,000 bpd pressure	e <u>1,400</u> psig	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
Proposed maximum injection: rate	14,000 bpd pressure	e <u>1,400</u> psig	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
Proposed maximum injection: rate	14,000 bpd pressuressuress □, and / or fresh wate	e1,400 psig	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
roposed maximum injection: rate	14,000 bpd pressure	e1,400 psig	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
Proposed maximum injection: rate	14,000 bpd pressuressuress □, and / or fresh wate	e1,400 psig	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
Proposed maximum injection: rate Proposed injection zone contains oil, gas ist of attachments:Surface Ownersi	14,000 bpd pressures	e1,400 psig or within ½ mile of the we and Topographic Maps	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
roposed maximum injection: rate roposed injection zone contains oil, gas st of attachments: Surface Ownersi	14,000 bpd pressure s , and / or fresh wate hip Plat, Civil Plat	e	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
Proposed maximum injection: rate Proposed injection zone contains oil, gas ist of attachments:Surface Ownersi	14,000 bpd pressure s , and / or fresh wate hip Plat, Civil Plat	e1,400 psig or within ½ mile of the we and Topographic Maps	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
Proposed maximum injection: rate Proposed injection zone contains oil, gastist of attachments: Surface Ownersi	14,000 bpd pressure s , and / or fresh wate hip Plat, Civil Plat	e	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
Proposed maximum injection: rate Proposed injection zone contains oil, gastist of attachments: Surface Ownersi	14,000 bpd pressure s , and / or fresh wate hip Plat, Civil Plat	e	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
Proposed maximum injection: rate Proposed injection zone contains oil, gastist of attachments: Surface Ownersi	14,000 bpd pressures I, and / or fresh wate hip Plat, Civil Plat ADDITIONAL INFORMALH OIL AND GAS CONSI	e	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
roposed maximum injection: rate roposed injection zone contains oil, gas ist of attachments:Surface Ownersi ATTACH / UTA	14,000 bpd pressures I, and / or fresh wate hip Plat, Civil Plat ADDITIONAL INFORMALH OIL AND GAS CONSI	e1,400 psig If within ½ mile of the we and Topographic Maps TION AS REQUIRED BY CUERVATION GENERAL RUL	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate II.	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715
roposed maximum injection: rate roposed injection zone contains oil, gas st of attachments: Surface Ownersi ATTACH A UTA	14,000 bpd pressures I, and / or fresh wate hip Plat, Civil Plat ADDITIONAL INFORMALH OIL AND GAS CONSI	e1,400 psig or within ½ mile of the we and Topographic Maps TION AS REQUIRED BY CLERVATION GENERAL RUL	Middle Navajo A Middle Navajo B Lower Navajo Kayenta Wingate	7435' - 7500 7515' - 7565 7600' - 7645 7665' - 7715

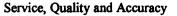














375 South Carbon Avenue A-10 Suite 101

Price, Utah 84501 Phone: 435-637-8781

435-637-5032 Ext 710/711

Cell: 801-650-1401

801-650-1402

Fax: 435-636-8603 Email: talon@castlenet.com

October 25, 2000

Mr. Chuck Snure
Texaco Exploration and Production, Inc.
Room # 152
P.O. Box 2100
Denver, Colorado 80201

RE: Notice of Application for Injection Well Anadarko Petroleum Corporation's Clawson Springs State SWD-4 well
1320' FNL 660' FEL, Section 13, T16S, R8E, SLB&M, Emery County, Utah

Dear Mr. Snure:

On behalf of Anadarko Petroleum Corporation (Anadarko), Talon Resources, Inc. respectfully submits this notice that the Utah Division of Oil, Gas and Mining (UDOGM) is in receipt of an Application for Injection Well (UIC Form 1) for the referenced well. A copy of the application with supplemental ownership and topographic information is being submitted to provide notice and information to you pursuant to R649-5-2.12 of the Oil and Gas Conservation, General Rules. Any person desiring to object to approval of such an application for an injection well shall file the objection in conformance with the procedural rules of the Board of Oil, Gas and Mining.

Written comments received by the State of Utah, Division of Oil, Gas, and Mining, (attn: Brad Hill), at P.O. Box 145801, Salt Lake City, Utah 84114-5801 on or before November 10, 2000, will be considered in making the final decision on the approval/disapproval of the proposed application.

Please feel free to contact myself at 435-637-8781 or Mr. Brad Hill at UDOGM at 1-801-538-5315 if you have any questions or concerns that could be addressed prior an objection being submitted.

Sincerely,

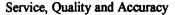
Don Hamilton

Don Hamilton

Environmental Manager / Project Coordinator

Enclosures

cc: Mr. Brad Hill, UDOGM





375 South Carbon Avenue A-10

Suite 101 Price, Utah 84501

Phone: 435-637-8781

435-637-5032 Ext 710/711

801-650-1401

Fax

801-650-1402

435-636-8603

Email: talon@castlenet.com

October 25, 2000

Mr. Ed Bonner School and Institutional Trust Lands Administration 675 East 500 South, Suite 500 Salt Lake City, Utah 84102-2818

RE: Notice of Application for Injection Well -Anadarko Petroleum Corporation's Clawson Springs State SWD-4 well 1320' FNL 660' FEL, Section 13, T16S, R8E, SLB&M, Emery County, Utah

Dear Mr. Bonner:

On behalf of Anadarko Petroleum Corporation (Anadarko), Talon Resources, Inc. respectfully submits this notice that the Utah Division of Oil, Gas and Mining (UDOGM) is in receipt of an Application for Injection Well (UIC Form 1) for the referenced well. A copy of the application with supplemental ownership and topographic information is being submitted to provide notice and information to you pursuant to R649-5-2.12 of the Oil and Gas Conservation, General Rules. Any person desiring to object to approval of such an application for an injection well shall file the objection in conformance with the procedural rules of the Board of Oil, Gas and Mining.

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Sincerely,

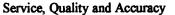
Hamilton

Don Hamilton

Environmental Manager / Project Coordinator

Enclosures

cc: Mr. Brad Hill, UDOGM





375 South Carbon Avenue A-10

Suite 101

Price Utah 84501 Phone: 435-637-8781

435-637-5032 Ext 710/711

801-650-1401

801-650-1402

Fax 435-636-8603 Email: talon@castlenet.com

October 25, 2000

ANR Co. Inc.

attn: Lands Department 3212 South State Street

Salt Lake City, Utah 84115-3825

RE: Notice of Application for Injection Well -

Anadarko Petroleum Corporation's Clawson Springs State SWD-4 well 1320' FNL 660' FEL, Section 13, T16S, R8E, SLB&M, Emery County, Utah

Dear Lands Department:

On behalf of Anadarko Petroleum Corporation (Anadarko), Talon Resources, Inc. respectfully submits this notice that the Utah Division of Oil, Gas and Mining (UDOGM) is in receipt of an Application for Injection Well (UIC Form 1) for the referenced well. A copy of the application with supplemental ownership and topographic information is being submitted to provide notice and information to you pursuant to R649-5-2.12 of the Oil and Gas Conservation, General Rules. Any person desiring to object to approval of such an application for an injection well shall file the objection in conformance with the procedural rules of the Board of Oil, Gas and Mining.

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Please feel free to contact myself at 435-637-8781 or Mr. Brad Hill at UDOGM at 1-801-538-5315 if you have any questions or concerns that could be addressed prior an objection being submitted.

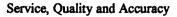
Sincerely,

Don **Don Hamilton**

Environmental Manager / Project Coordinator

Enclosures

cc: Mr. Brad Hill, UDOGM





375 South Carbon Avenue A-10

Suite 101

Price, Utah 84501 Phone: 435-637-8781

435-637-5032 Ext 710/711

cell: 801-650-1401

801-650-1402

Fax 435-636-8603

Email: talon@castlenet.com

October 25, 2000

Dominion Resources—Utah Inc. attn: Jerry Moore 120 Tregegar Street Richmond, Virginia 23219

RE: Notice of Application for Injection Well -

Anadarko Petroleum Corporation's Clawson Springs State SWD-4 well 1320' FNL 660' FEL, Section 13, T16S, R8E, SLB&M, Emery County, Utah

Dear Mr. Moore:

On behalf of Anadarko Petroleum Corporation (Anadarko), Talon Resources, Inc. respectfully submits this notice that the Utah Division of Oil, Gas and Mining (UDOGM) is in receipt of an Application for Injection Well (UIC Form 1) for the referenced well. A copy of the application with supplemental ownership and topographic information is being submitted to provide notice and information to you pursuant to R649-5-2.12 of the Oil and Gas Conservation, General Rules. Any person desiring to object to approval of such an application for an injection well shall file the objection in conformance with the procedural rules of the Board of Oil, Gas and Mining.

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Please feel free to contact myself at 435-637-8781 or Mr. Brad Hill at UDOGM at 1-801-538-5315 if you have any questions or concerns that could be addressed prior an objection being submitted.

Sincerely,

Den Hamilton Don Hamilton

Environmental Manager / Project Coordinator

Enclosures

SHEW WITH CASH AND COM

CONTROL OF CIT, CALL AND INDIANG





Service, Quality and Accuracy

375 South Carbon Avenue A-10

Suite 101

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Phone: 435-637-8781 435-637-5032 Ext 710/711 Cell: 801-650-1401

801-650-1402

Fax: 435-636-8603 Email: talon@castlenet.com

October 25, 2000

Mr. Gil Hunt State of Utah Division of Oil Gas and Mining P.O. Box 145801 Salt Lake City, Utah 84114-5801

RE: Application for Injection Well—Clawson Springs State SWD-4, Emery County, Utah 1320' FNL, 660' FEL, Section 13, T16S, R8E, SLB&M.

Dear Mr. Hunt:

On behalf of Anadarko Petroleum Corporation (Anadarko), Talon Resources, Inc. respectfully submits the enclosed original of the Application for Injection Well (UIC Form 1) for the above referenced well. Included with the UIC Form 1 is the following supplemental information:

Exhibit "A" - Surface Use Plat;

Exhibit "B" - Civil Plat;

Exhibit "C" - Topographic Maps.

Anadarko desires to submit this application now to begin the noticing process and comment period following your receipt of the affidavit of notification. Supplemental information will be submitted in the future by Anadarko or Talon as the completion of the well occurs.

Thank you for your timely processing and review of this application. Please feel free to contact myself or Mr. Lloyd Stutz of Anadarko at 1-832-601-3091 if you have any questions or need additional information.

Sincerely,

Don Hamilton

Don Hamilton

Environmental Manager / Project Coordinator

cc: Mr. Lloyd Stutz, Anadarko Mr. Jim Hartley, Anadarko Job #197 file

UIC-266.1

TOTAL 40 COST

CAL C. W. AND AMBRING

10-30-2000 K **ORIGINAL**

143 SOUTH MAIN ST. P.O.BOX 45838 SALT LAKE CITY, UTAH 84145 FED.TAX I.D.# 87-0217663

Newspaper Agency Corporation The Stalt Lake Tribune (NA) DESERT NEWS PROOF OF PUBLICATION

CUSTOMER'S COPY

CUSTOMER NAME AND ADDRESS	ACCOUNT NUMBER	DATE
DIV OF OIL-GAS & MINING 1594 W NORTH TEMP #1210 P.O. BOX 145801	D5385340L-07	11/18/00
SALT LAKE CITY, UT 84114		

ACCO	UNT NAME	***************************************	
TELEPHONE	GAS & MINING INVOICE NUMBER		
901 529 5240			
801-538-5340 SCHE	TL8200XN0G1	BEFORE THE DIVISION OF DEPARTMENT OF N	OF OIL, GAS AND MINING IATURAL RESOURCES OF UTAH
			Ooo—
	D END 11/18/00 REF. NO.	IN THE MATTER OF THE APPLICATION OF ANADARKO PETROLEUM CORPORATION FOR ADMINISTRATIVE APPROVAL OF THE CLAWSON SPRING SWD #4 WELL LOCATED IN SECTION 13, TOWNSHIP 16 SOUTH, RANGE 6 EAST, S.L.M., EMERY COUNTY, UTAH, AS A CLASS IF INJECTION WELL	: NOTICE OF AGENCY ACTION : CAUSE NO. UIC-266,1
		THE CLAWSON SPRING SWD #4 WELL LOCATED IN SECTION 13, TOWNSHIP 16 SOUTH, RANGE 8	; :
UIC 20	66.1 PTION	UTAH, AS A CLASS I INJECTION WELL	
		THE STATE OF UTAH TO ALL PERSONS	DOO-
	ISION OF OIL, GA		
		ing (the "Division") is commence ceeding to consider the applica- poration for administrative appro-	ng an informal adjudicative pro- tion of Anadarko Petroleum Cor- oval of the Clawson Soring State
TIMES 54 LINES	2.00 COLUMN RATE	Notice is hereby given that ing (the "Division") is commencited the application of the ap	13, Township 16 South, Range 8 conversion to a Class II injection aducted in accordance with Utah
_	NA I B	The interval from 7,300 feet	rocedures. to 7,645 feet (Navajo Formation),
MISC. CHARGES	1.16	The interval from 7,300 feet 7,665 feet to 7,715 feet (Kayent 7,825 feet (Wingate Formation) water injection. The maximum 1,400 psig surface pressure with a	d Formation), and 7,750 feet to vill be selectively perforated for requested injuries and 4.400 purple is
	AD CHARGES	Any person desiring to object intervene in the proceeding, mut	if to the application or otherwise
00	125.28	cation of this notice. If such a perceived, a hearing will be school	ithin fifteen days following publi- rolest or notice of intervention is eduled in accordance with the
	TOTAL COST	Any person desiring to object intervente in the proceeding, must of intervention with the Division was cation of this notice. If such a preceived, a hearing will be school of the process	procedure rules. Profestants epared to demonstrate at the er interests.
L	125.28	Dated this 14th day of Noven	nber 2000.
AFFIDAV	IT OF PUBLICATION		STATE OF UTAH DIVISION OF OIL, GAS & MINING
		82UUXNDG	/s/ John R. Baza Associate Director
AS NEWSPAPER AGENCY CORPORATION ADVERTISEMENT OF BEFORE THE	LEGAL BOOKKEEPER, I CERTI DIVISION OF OIL GA	FY THAT THE ATTA	CHED
DIV OF OIL-GAS & MINING	WAS DIED TOURD DU	THE NEWSPAPER AG	FOR ENCY
CORPORATION, AGENT FOR THE SALT PRINTED IN THE ENGLISH LANGUAGE IN SALT LAKE CITY SALT LAKE CO	LAKE TRIBING AND DECEDED	177770	
IN SALT LAKE CITY, SALT LAKE CO	OUNTY IN THE STATE OF UTAH.	IN UTAH, AND PUBL	ISHED
PUBLISHED ONSTART 11	10.7.1.		
6-	/18/00 END 11/18/00		_
SIGNATURE	< Mo.		C 60 = 7 - 2 = - 2
DATE 11/18/00 //			



VIA U.S. POST OFFICE EXPRESS

November 7, 2000

Mr. Gil Hunt State of Utah Division of Oil, Gas and Mining P.O. Box 145801 Salt Lake City, Utah 84114-5801

RE:

Application for Injection Well Clawson Spring SWD 4 Carbon County, Utah

Dear Mr. Hunt:

Please find enclosed an "Affidavit of Service" executed on behalf of Anadarko Petroleum Corporation as required for subject application. If anything further is required, please contact me at (281) 876-8374.

Sincerely,

Patrick A. Smith Project Landman

cc: Don Hamilton

RECEIVED

NOV 8 9 2000

DIVISION OF OIL, GAS AND MINING

AFFIDAVIT OF SERVICE

STATE:

Texas

COUNTY:

Harris

AFFIANT:

Anadarko Petroleum Corporation

P.O. Box 1330

Houston, Texas 77251-1330

DATE OF EXECUTION:

November 6, 2000

Affiant on oath swears that the following statement is true:

To the best of affiant's knowledge, a true and correct copy of that certain Application for Injection Well dated October 10, 2000 (Clawson Spring SWD 4) along with a supplemental ownership plat and a topographic map has been provided all oil and gas operators, mineral owners and surface owners located with a one-half mile radius of the proposed injection well location.

Affiant:

Anadarko Petroleum Corporation

Project Landman

Suscribed and sworn before me on this day of November, 2000.

Notary Public

State of Texas

My commission expires: 6-21-03

RECEIVED

NOV 0 9 2000

DIVISION OF OIL, GAS AND MINING Michael O. Leavitt
Governor
Kathleen Clarke
Executive Director
Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210 PO Box 145801 Salt Lake City, Utah 84114-5801 801-538-5340 801-359-3940 (Fax) 801-538-7223 (TDD)

November 14, 2000

SENT VIA E-MAIL AND FAX (801) 237-2776

Salt Lake Tribune PO Box 45838 Salt Lake City, UT 84145

RE: Notice of Agency Action - Cause No. UIC 266.1

Gentlemen:

Enclosed is a copy of the referenced Notice of Agency Action. Please publish the Notice, once only, as soon as possible. Please send proof of publication and billing to the Division of Oil, Gas and Mining, Suite 1210, PO Box 145801, Salt Lake City, Utah 84114-5801.

Sincerely,

Earlene Russell

Secretary

encl.

1594 West North Temple, Suite 1210

Michael O. Leavitt Governor Kathleen Clarke **Executive Director**

Lowell P. Braxton

PO Box 145801 Salt Lake City, Utah 84114-5801 801-538-5340 801-359-3940 (Fax)

Lowell P. Braxton Division Director 801-538-7223 (TDD)

SENT VIA FAX (435) 637-2716

November 14, 2000

Sun Advocate 845 East Main Street Price, Utah 84501

Notice of Agency Action - Cause No. UIC 266.1 RE:

Gentlemen:

Enclosed is a copy of the referenced Notice of Agency Action. Please publish the Notice, once only, as soon as possible. Please send proof of publication and billing to the Division of Oil, Gas and Mining, Suite 1210, PO Box 145801, Salt Lake City, Utah 84114-5801.

Sincerely,

Secretary

encl.

From:

"NAC Legais" <naclegal@nacorp.com>

To:

"Earlene Russell" <nrogm.erussell@state.ut.us>

Date:

11/14/00 3:31PM

Subject:

Re: Cause 266.1 Clawson Spring SWD #4

Thank you.

Ad is scheduled for Saturday, Nov. 18.

Lynn

----Original Message-----

From: Earlene Russell <nrogm.erussell@state.ut.us>
To: NAClegal@NACorp.com <NAClegal@NACorp.com>

Date: Tuesday, November 14, 2000 2:39 PM Subject: Cause 266.1 Clawson Spring SWD #4

Please notify me of publishing date. Thanks.

·	TRANSACTION F	REPORT	•) No	0V-14-2000) TUE	03:50	F
FOR: OIL, GAS & MINING	801 39	59 3940						
DATE START RECEIVER	TX TIME	PAGES	TYPE	NO'	TE		M#	[
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		TOTAL	. ;	48S	PAGES:	2		



DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt Governor

Kathleen Clarke

Executive Director Lowell P. Braxton
Division Director

801-359-3940 (Fax)
801-538-7223 (TDD) SENT VIA FAX (435) 637-2716

1594 West North Temple, Suite 1210 PO Box 145801 Salt Lake City, Utah 84114-5801 801-538-5340 801-359-3940 (Fax)

November 14, 2000

Sun Advocate 845 East Main Street Price, Utah 84501

Notice of Agency Action - Cause No. UIC 266.1 RE:

Gentlemen:

Enclosed is a copy of the referenced Notice of Agency Action. Please publish the Notice, once only, as soon as possible. Please send proof of publication and billing to the Division of Oil, Gas and Mining, Suite 1210, PO Box 145801, Salt Lake City, Utah 84114-5801.

Carlene Russell

	TRANSACTION F	REPORT	NOV-14-20	000 TUE 03:49 P
FOR: OIL, GAS & MINING	801 39	59 3940		
DATE START RECEIVER	TX TIME	PAGES TYPE	NOTE	M# D
NOV-14 03:48 PM 2372776	43"	2 SEND	OK	352
		TOTAL:	43S PAGES	: 2



Michael O. Leavitt Governor Kathleen Clarke

Kathleen Clarke
Executive Director
Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210 PO 8ox 145801 Salt Lake City, Utah 84114-5801 801-538-5340 801-359-3940 (Fax)

November 14, 2000

SENT VIA E-MAIL AND FAX (801) 237-2776

801-538-7223 (TDD)

Salt Lake Tribune PO Box 45838 Salt Lake City, UT 84145

RE: Notice of Agency Action - Cause No. UIC 266.1

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Sincerely,

M

BEFORE THE DIVISION OF OIL, GAS AND MINING DEPARTMENT OF NATURAL RESOURCES STATE OF UTAH

---00000---

IN THE MATTER OF THE

NOTICE OF AGENCY ACTION

APPLICATION OF ANADARKO

PETROLEUM CORPORATION FOR

CAUSE NO. UIC-266.1

ADMINISTRATIVE APPROVAL OF THE CLAWSON SPRING SWD #4

WELL LOCATED IN SECTION 13, TOWNSHIP 16 SOUTH, RANGE 8

EAST, S.L.M., EMERY COUNTY, UTAH, AS A CLASS II INJECTION

WELL

---ooOoo---

THE STATE OF UTAH TO ALL PERSONS INTERESTED IN THE ABOVE ENTITLED MATTER.

Notice is hereby given that the Division of Oil, Gas and Mining (the "Division") is commencing an informal adjudicative proceeding to consider the application of Anadarko Petroleum Corporation for administrative approval of the Clawson Spring State SWD #4 well, located in Section 13, Township 16 South, Range 8 East, Emery County, Utah, for conversion to a Class II injection well. The proceeding will be conducted in accordance with Utah Admin. R.649-10, Administrative Procedures.

The interval from 7,300 feet to 7,645 feet (Navajo Formation), 7,665 feet to 7,715 feet (Kayenta Formation), and 7,750 feet to 7,825 feet (Wingate Formation) will be selectively perforated for water injection. The maximum requested injection pressure is 1,400 psig surface pressure with a maximum rate of 14,000 BWPD.

Any person desiring to object to the application or otherwise intervene in the proceeding, must file a written protest or notice of intervention with the Division within fifteen days following publication of this notice. If such a protest or notice of intervention is received, a hearing will be scheduled in accordance with the aforementioned administrative procedure rules. Protestants and/or intervener should be prepared to demonstrate at the hearing how this matter affects their interests.

Dated this 14th day of November 2000.

STATE OF UTAH

DIVISION OF OIL, GAS & MINING

Jøhn R. Baza

Associate Director

Anadarko Petroleum Corporation Clawson Spring SWD #4 Cause No. UIC-266.1

Publication Notices were sent to the following:

Anadarko Petroleum Corporation 17001 Northchase Drive PO Box 1330 Houston, Texas 77251-1330

(Via E-Mail and Facsimile 237-2577) Newspaper Agency Corporation Legal Advertising PO Box 45838 Salt Lake City, Utah 84145

(Via Facsimile (435) 637-2716) Sun Advocate 845 East Main Street Price, Utah 84501

School and Institutional Trust Lands Administration 675 East 500 South, Suite 500 Salt Lake City, UT 84102-2818

Bureau of Land Management Moab District Office 82 East Dogwood Moab, Utah 84532

Dan Jackson
U.S. Environmental Protection Agency
Region VIII
999 18th Street
Denver, Colorado 80202-2466

Earlene Russell

November 14, 2000

Michael O. Leavitt Governor Kathleen Clarke Executive Director Lowell P. Braxton Division Director 1594 West North Temple, Suite 1210 PO Box 145801 Salt Lake City, Utah 84114-5801 801-538-5340 801-359-3940 (Fax) 801-538-7223 (TDD)

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Earlene Russell

Secretary

encl.

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Dan Jackson U.S. Environmental Protection Agency Region VIII 999 18th Street Denver, Colorado 80202-2466

Earlene Russell November 14, 2000

STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL. GAS AND MINING

CONFIDENTIAL

FORM 9

	DIVISION OF OIL, GAS AND M	IINING	5. LEASE DESIGNATION AND SERIAL NUMBER: ML - 48217
SUNDRY	Y NOTICES AND REPORT	S ON WELLS	6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A
Do not use this form for proposals to dri	Ill now walle cignificantly danger existing walls helpe	current bottom-hole depth, reenter plugged wells, or to	7. UNIT or CA AGREEMENT NAME:
drill horizontal latera	als. Use APPLICATION FOR PERMIT TO DRILL OR	DEEPEN form for such purposes	N/A
1. TYPE OF WELL OIL WEL	L GAS WELL OTHE	ER: <u>Coalbed Methan</u> e	8. WELL NAME and NUMBER: Clawson Spring State SWD-4
2. NAME OF OPERATOR:	,,,,,, 1-1-1-1		9. API NUMBER:
Anadarko Petroleum	Corporation		43-015-30477
3. ADDRESS OF OPERATOR:	Houston, Texas 77060	PHONE NUMBER: 281 - 874 - 3441	10. FIELD AND POOL, OR WILDCAT: Clawson Spring CBM
17001 Northchase Dr 4. LOCATION OF WELL	., Houston, Texas 77000	201-074-3441	Crawson Spiring Con
FOOTAGES AT SURFACE:			COUNTY:
	& 660' FEL		Emery STATE:
QTR/QTR, SECTION, TOWNSHIP, I	range, meridian: on 13 T16S R8E		HATU
		E MATURE OF MOTION DEPOS	T OR OTHER DATA
	OPRIATE BOXES TO INDICAT	E NATURE OF NOTICE, REPOR	T, UK OTHER DATA
TYPE OF SUBMISSION		TYPE OF ACTION	REFERFORATE CURRENT FORMATION
X NOTICE OF INTENT (Submit in Duplicate)	ACIDIZE	DEEPEN FRACTURE TREAT	SIDETRACK TO REPAIR WELL
Approximate date work will start:	ALTER CASING CASING REPAIR	FRACTURE TREAT NEW CONSTRUCTION	TEMPORARILY ABANDON
Approximate date work will start.	CHANGE TO PREVIOUS PLANS	OPERATOR CHANGE	TUBING REPAIR
	CHANGE TUBING	PLUG AND ABANDON	VENT OR FLARE
SUBSEQUENT REPORT	CHANGE WELL NAME	PLUG BACK	WATER DISPOSAL
(Submit Original Form Only)	CHANGE WELL STATUS	PRODUCTION (START/RESUME)	WATER SHUT-OFF
Date of work completion:	COMMINGLE PRODUCING FORMATIONS	RECLAMATION OF WELL SITE	X OTHER <u>Status Report</u>
Status 11/09/00	CONVERT WELL TYPE	RECOMPLETE - DIFFERENT FORMATION	
12. DESCRIBE PROPOSED OR	COMPLETED OPERATIONS. (Clearly show	all pertinent details including dates, depths, vol	umes, etc.
Please see current	: Well History Report attached	d.	
	×		
			(COL 0 0 000)
			CAL, CAG AND LIBING
NAME (PLEASE PRINT) Jenni	fer Berlin	TITLE Environmental/	Regulatory Analyst
SIGNATURE	B/	DATE November 15, 20	
(This space for State use only)			

CLAWSON SPRINGS SWD #4, CLAWSON SPRINGS FIELD, 1320' FNL & 660' FEL, SEC 13–16S-8E, EMERY CO., UTAH, WI 1.0, NRI 0.875, AFE #20524, ETD 8050', GLE 6614', CYCLONE RIG #7, API # 43-015-30477

9/21-26/00 DFS 06	SPUD @ 09:00 HRS 9/20/00 WIL AIR RIG, SET 60' OF 20" COND PIPE, DRILL TO 80', GRAVEL PROBLEMS, CMT BACK TO 60', DO TO 140', GRAVEL PROBLEMS, CMT BACT TO 60', DO TO 325', TOH LDDP
9/27/00 DFS 07	315 (0') MIRU CYCLONE #7 RAN 7 JNTS 13 3/8" 48# H40 CSG, SET @ 315', CMTD W/ 390 SXS CLASS G, MIXED @ 15.8 PPG, CMT CIRC, FLOATS HELD, DO CELLAR, SET RING, CO CSG, WELD ON HEAD, MOVE IN CYCLONE
9/28/00	325 (0') MIRU RT
DFS 08	MOVE IN CYCLONE #7, RIGGING UP
9/30/00	370' (32') TIH W/ BIT, MW-AIR
DFS 10	DRILL RH AND MH, TIH W/ AIR HAMMER AND MT BIT, DO FLOAT EQUIP AND SHOE, DRILL 32' NEW HOLE, TOH TO CHANGE BITS, LAST SURVEY @ 330' – 1.0°
10/01/00	CC: \$143,080 920' (550') DRILLING , MW-AIR
10/01/00 DFS 11	TIH W/ BIT #2, LAST SURVEY @ 330' – 1.0°
Drs II	CC: \$154,430
10/02/00	1709' (789') DRILLING , MW-AIR
DFS 12	LAST SURVEY @ 1390' – 1.5°
21212	CC: \$175,870
10/03/00	2640' (931') DRILLING , MW-AIR
DFS 13	LAST SURVEY @ 2409'25°
	CC: \$192,654
10/04/00	3170' (530') DRILLING , MW-AIR
DFS 14	TFB #3 @ 3141, LAST SURVEY @ 3095' – 1.75°
10/05/00	CC: \$205,364
10/05/00 DEC 15	3779' (609') TOH , MW-AIR TD HOLE @ 19:00 HRS, BLOW HOLE, TOH TO 3589, HOLE PACKED OFF, WORKED
DFS 15	THROUGH TITE SPOT, TOH, LAST SURVEY @ 3095' – 1.75° CC: \$220,483
10/06/00	3779' (0') CIRC AND COND HOLE, MW-AIR
DFS 16	JARRED AND WORKED PIPE THROUGH TITE HOLE 3559-3059, TOH, LDDC, TIH W/ BIT, REAMED AND CLEANED UP HOLE BACK TO TD, CIRC HOLE CLEAN, PREP TO TOH AND RUN CSG, LAST SURVEY @ 3095° – 1.75°
	CC: \$238,844
10/07/00	3779' (0') NU BOPE, MW-NONE
DFS 17	PMPD 750 BW PROD WTR, NO CIRC, TOH W/ DP, RAN 83 JNTS 9 5/8" 40# J55 CSG, SET @ 3732, 1 JNTS OFF BTM, CSG STUCK, TRIED TO EST CIRC, NO RETURNS, PMPD GEL AND
	LCM, NO CIRC, CMT W/ 460 SXS HILIFT POZMIX LEAD, MIXED @ 11PPG, 175 SXS CLASS
	G TAIL, MIXED @ 15.8PPG, HOLE BRIDGED OFF TWICE, MOVED PIPE TO UNBRIDGE,
	EST CIRC AFTER 180 BLS, BMPD PLUG, NO CMT TO SURF, RAN 1" PIPE AND CMTD TO
	SURF W/ 30 SXS CLASS G CMT, SET SLIPS, CO CSG, PREP TO NU BOPE. CC: \$333,541
10/08/00	3779' (0') TIH W/ BIT, MW-8.5 PPG
DFS 18	INSTALL B SEC, NU BOPE, TEST BOPE, FIX LEAKS, INSTALL WEAR BUSHING, REPLACE DRILLING LINE, TIH W/ BIT.
10/00/00	CC: \$360,331
10/09/00	3816' (37') CIRC HOLE CLEAN, MW-8.5 PPG

CTTOLON DE CALOLICACIONES

CLAWSON SPRINGS SWD #4, CLAWSON SPRINGS FIELD, 1320' FNL & 660' FEL, SEC 13–16S-8E, EMERY CO., UTAH, WI 1.0, NRI 0.875, AFE #20524, ETD 8050', GLE 6614', CYCLONE RIG #7, API # 43-015-30477

DFS 19	DO FLOAT EQUIP, PERFORM FIT TO 10 PPG EMW, REPAIR SHALE SHAKER MTR, DRILL TO 3816, HOLE SLOUGHING, LOOSING MUD, MIX LCM AND REPAIR, MUD PUMP, REPACK SWIVEL, W&R TO BTM, CIRC HOLE CLEAN. CC: \$377,415
10/10/00	42196' (403') DRILLING , MW-8.6 PPG
DFS 20	MAIN MUD PUMP DOWN FOR REPAIRS
21020	CC: \$392,667
10/11/00	4373' (154') DRILLING , MW-8.6 PPG
DFS 21	REPAIR MAIN MUD PUMP 12 HRS,
21021	CC: \$403,840
10/12/00	4603' (230') DRILLING , MW-8.6 PPG
DFS 22	REPAIR MAIN MUD PUMP 12 HRS,
	CC: \$413,335
10/13/00	4814' (211') TFB , MW-8.7 PPG
DFS 21	TFB #5 @ 4814
	CC: \$430,313
10/14/00	5110' (296') DRILLING , MW-8.9 PPG
DFS 22	LAST SURVEY @ 4774 - 0.75°
	CC: \$440,173
10/15/00	5338' (228') DRILLING , MW-8.9 PPG
DFS 23	LOST 100 BM @ 5238, LAST SURVEY @ 4774 – 0.75°
	CC: \$451,555
10/16/00	5467' (129') DRILLING , MW-8.7 PPG
DFS 24	TFB #6, LAST SURVEY @ 4774 – 0.75°
	CC: \$468,637
10/17/00	5743' (276') DRILLING , MW-8.8 PPG
DFS 25	LAST SURVEY @ 4774 – 0.75°
	CC: \$480,514
10/18/00	5992' (249') DRILLING , MW-8.9 PPG
DFS 26	LAST SURVEY @ 4774 – 0.75°
	CC: \$492,706
10/19/00	6200' (208') DRILLING , MW-8.9 PPG
DFS 27	MAIN MUD PUMP DOWN FOR REPAIRS, LAST SURVEY @ 4774 – 0.75°
	CC: \$504,948
10/20/00	6228' (28') WO DRILL COLLARS , MW-8.7 PPG
DFS 28	DRILLED TO 6228', LOST PRESSURE, TOH F/ WASHOUT IN DP, INSPECT COLLARS,
	REJECT 8 DC W/ CRACKS, TIH W/ 16 DCS, WO ADDITIONAL COLLARS, REPAIRED #1
	MUD PUMP, LAST SURVEY @ 4774 – 0.75°
	CC: \$518,655
10/21/00	6228' (0') TIH W/ BIT, MW-8.7 PPG
DFS 29	WO DCS 7 HRS, WO CREWS 7.5 HRS, CO COLLARS, TIH W/ BIT, LAST SURVEY @ 4774 -
	0.75°
	CC: \$529,050
10/22/00	6228' (0') W & R, MW-8.7 PPG
DFS 30	TIH, WASH AND REAM TO 4460', HOLE IN BAD CONDITION, LAST SURVEY @ 4774 -
	0.75°
	CC: \$546,406
10/23/00	6315' (87') DRILLING , MW-8.7 PPG

CLAWSON SPRINGS SWD #4, CLAWSON SPRINGS FIELD, 1320' FNL & 660' FEL, SEC 13–16S-8E, EMERY CO., UTAH, WI 1.0, NRI 0.875, AFE #20524, ETD 8050', GLE 6614', CYCLONE RIG #7, API # 43-015-30477

DFS 31	WASH AND REAM TO 6228', STARTED DRILLING NEW HOLE @ 14:00 HRS 10/22/00, LAST SURVEY @ 4774 – 0.75°
10/24/00	CC: \$556,578 6510' (195') DRILLING, MW- 8.7 PPG
DFS 32	LAST SURVEY @ 4774 – 0.75°
DF3 32	CC: \$567,018
10/25/00	6686' (176') DRILLING, MW-8.7 PPG
DFS 33	LAST SURVEY @ 4774 – 0.75°
Dra 33	CC: \$579,002
10/26/00	6850' (164') DRILLING, MW-9.0 PPG
DFS 34	LAST SURVEY @ 4774 – 0.75°
D1 0 54	CC: \$589,842
10/27/00	6972 (122') TFB , MW-9.0 PPG
DFS 35	TFB #8 @ 6972', LAST SURVEY @ 6940 – 1.25°
D1 0 33	CC: \$601,154
10/28/00	7124 (152') DRILLING , MW-9.0 PPG
DFS 36	LAST SURVEY @ 6940' – 1.25°
DISSO	CC: \$618,140
10/29/00	7390 (266') DRILLING , MW-9.0 PPG
DFS 37	LAST SURVEY @ 6940' – 1.25°
2155.	CC: \$629,413
10/30/00	7581 (191') TFB , MW-9.1 PPG
DFS 38	LOST 150 BM @ 7581', SPOT LCM PILL, REGAINED 80% RETURNS, TFB #9 @ 7581', LAST
	SURVEY @ 6940' - 1.25°
	CC: \$629,413
10/31/00	7761 (180') DRILLING, MW-9.1 PPG
DFS 39	LAST SURVEY @ 6940' - 1.25°
	CC: \$658,531
11/01/00	7935 (174') LOGGING, MW-9.0 PPG
DFS 40	TD @ 09:00 HRS, SWIVEL LOCKED UP, CCM, SHORT TRIP, CCM, TOH, RUNNING LOGS,
	LAST SURVEY @ 6940' – 1.25°
	CC: \$671,063
11/02/00	8045 (110') DRILLING , MW-9.0 PPG
DFS 41	RAN LOGS, TIH W/ BIT TO DEEPEN TO 8300', LOST 200 BM @ 8026, REGAINED CIRC,
•	LAST SURVEY @ 7930' – 1.75°
	CC: \$690,292
11/03/00	8237 (192') TIH , MW - 9.0 PPG
DFS 42	TF WASHOUT @ 7170', LAST SURVEY @ 7930' – 1.75°
	CC: \$702,515
11/04/00	8320 (83') CIRC, WO CREWS TO TOH, MW - 9.0 PPG
DFS 43	W & R TO BTM, TD @ 18:00 HRS 11/3/00, CCM, SHORT TRIP, NO DAYLIGHT CREWS TO
	TOH FOR LOGS, LAST SURVEY @ 7930' – 1.75°
	CC: \$715,316
11/05/00	8320 (0') CIRC FOR CSG, MW - 9.0 PPG
DFS 44	WO CREWS 7 HRS, TOH, RAN LOGS, TIH, CCM, PREP TO TOH LDDP & DC WHEN FULL
	CREWS SHOW UP, LAST SURVEY @ 7930' – 1.75°
11/06/00	CC: \$724,221
11/06/00	8320 (0') CIRC FOR 2 ND STAGE CMT, MW - 9.0 PPG

and the second s

CLAWSON SPRINGS SWD #4, CLAWSON SPRINGS FIELD, 1320' FNL & 660' FEL, SEC 13-16S-8E, EMERY CO., UTAH, WI 1.0, NRI 0.875, AFE #20524, ETD 8050', GLE 6614', CYCLONE RIG #7, API # 43-015-30477

CCM. TOH LDDP & DC. RAN 206 JNTS 7" 26# N80 CSG, SET @ 8320', DV TOOL @ 7091', **DFS 45** CCM, LOST CIRC, MIX MUD AND LCM, SPOT LCM PILL, CMTD 1ST STAGE W/ CLASS G, LOST RETURNS DURING PART OF DISPLACEMENT, PLUG DID NOT BUMP, FLOATS HELD, OPENED DV TOOL, CCM FOR 2ND STAGE, LAST SURVEY @, 7930' - 1.75°

CC: \$844,389

8320 (0') UNLOADING 3 1/2" DP 11/07/00

CMTD 2ND STAGE, FULL CIRC, DROPPED DV BOMB, CLOSED TOOL, ND BOPE, SET **DFS 46** SLIPS, CO CSG, NU HEAD AND FLOW NIPPLE, LD 4 1/2" KELLY AND TOOLS, UNLOAD AND PICKING UP 3 1/2" TOOLS AND DP TO DO DV TOOL.

CC: \$882,072

8320 (0') TIH W/3 1/2" DP 11/08/00

UNLOAD 3 1/2" DP AND TOOLS, RIG UP TOOLS AND KELLL, TIH W/ 6 1/8" BIT, 3-4 3/4" **DFS 47** DCS AND 3 1/2" DP TO 6750'.

CC: \$900.660

8320 (0') RIG RELEASED 11/09/00

DO DV TOOL @ 7091', DO CMT 8268-8275', CLOSE ANNULAR AND TEST CSG TO 1500#, **DFS 48**

WOULD NOT HOLD, TOH LDDP, LOAD UP DP, CO PITS, RELEASED RIG @ 24:00 HRS

11/08/00, TEMPORARILY DROP FROM REPORT, SI WO COMPL.

CC: \$915,775

CALCIDADORA CALCIDADO

STATE OF UTAH DIVISION OF OIL GAS AND MINING

INJECTION WELL - PRESSURE TEST

Well Name: Lawson Spanes	St 5W0#4 A	PI Number: _	43-015-30477	<u>, </u>
Qtr/Qtr: Sh/NE Section	: <u>/3</u> т	ownship: <u>/6</u>	<u> </u>	E
Qtr/Qtr: <u>Sk/ME</u> Section Company Name: <u>ANADAN</u>	KO PETROL	FUM COR	PORATION	
	ee	Federal		
Inspector: Ilmus Z	1 - c 24 -	1/-	30-00	
Inspector: JV Mms P	JAS Var D	ale		
Initial Conditions:			_	
Tubing - Rate:		Pressure:_	<u> </u>	psi
Casing/Tubing Annulus - Press	sure:	psï		
Conditions During Test:				
Time (Minutes)	Annulus Press	sure	Tubing Pressure	
0	1000P	SI	0 PSI-	
5	1000	·	OPSI	
10	/000		<u> </u>	
15	1000			
20	/000		0	
25	1000		<u> </u>	
30	1000		O	
Results: Pass/Fail				
Conditions After Test:				
Tubing Pressure:	psi			
Casing/Tubing Annulus P	ressure: / 00	psi psi		,
COMMENTS: F.// Casada	De LOUINE C	TEST T	Est of Chan	tes
comments: Fill Casing.	K. Tubh	16 UpluE C	PEN DURNG	TEST.
Tested@2:45 Pm				
m Tallow				
Operator Representative				

RECEIVED

STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING

DEC 1 1 2000

	DIVISION	OF
OIL,	GAS AND	MINING

ENTITY ACTION FORM

77060

zip

0035

Operator:

Anadarko Petroleum Corporation

Operator Account Number: N 14667-0

Address:

17001 Northchase Drive

Houston city

ΤX state

Phone Number: (281) 874-3441

Well 1

API Number	Well	QQ	QQ Sec Twp		Rng County		
4301530392	Clawson Springs State E-6		SENE	7	168	9E	Emery
Action Code	Current Entity Number	New Entity Number	Effec		Entity Assignment Effective Date		
Α	99999	12960			3-00		

Comments:

1-20-10

CONFIDENTIAL

Well 2

API Number	Well	QQ Sec Twp		Rng County			
43-015-30476	Clawson Sprin	SESE	6	165	9E	Emery	
Action Code	Current Entity Number	New Entity Number	Spud Date		Entity Assignment Effective Date		
Α	99999 /29 78 10		10/9/00 10-9			-9-00	
omments:	CONCIDENTIAL						

12-11-00

CUNFILENTIAL

Well 3

API Number	Well Name Clawson Springs State SWD 4			Sec	Twp	Rng	County
43-015-30477				13_	16S	8E	Emery
Action Code	Current Entity Number	New Entity Number	Spud Date 9/20/00		Entity Assignment Effective Date		
Α	99999	12979			9.	9-20-00	
Comments:	CONCIDENTIAL						

CUNFILLENTIAL

ACTION CODES:

- A Establish new entity for new well (single well only)
- B Add new well to existing entity (group or unit well)
- C Re-assign well from one existing entity to another existing entity
- D Re-assign well from one existing entity to a new entity
- E Other (Explain in 'comments' section)

Jennifer Berlin

Environmental Regulatory Analyst

12/4/2000

Talon Resources, Inc.



Service, Quality and Accuracy

375 South Carbon Avenue A-10

Suite 101

Price, Utah 84501 Phone: 435-637-8781 Cell: 801-650-1401

801-650-1402

Fax: 435-636-8603 Email: talon@castlenet.com

435-637-5032 Ext 710/711

11

155 557 5552 24 1 157 7 11

December 22, 2000

Mr. Michael Hebertson State of Utah Division of Oil Gas and Mining P.O. Box 145801 Salt Lake City, Utah 84114-5801

RE: Supplemental Information - Application for Injection Well — UIC Form 1
Anadarko Petroleum Corporation - Clawson Springs State SWD 4
1320' FNL 660' FEL, Section 13, T16S, R8E, SLB&M, Emery County, Utah

Dear Mr. Hebertson:

On behalf of Anadarko Petroleum Corporation (Anadarko), Talon Resources, Inc. respectfully submits the following supplemental information for permit for an Injection Well within the existing Clawson Springs Field.

For your ease of review, I have supplied the necessary information following each quotation from The Oil and Gas Conservation General Rules, R649-5-2. "Requirements for Class II Injection Wells" parts 1 through 2.

Please accept this letter as Anadarko's written request for confidential treatment of all information contained in and pertaining to this permit application, if said information is eligible for such consideration.

Please feel free to contact Mr. Lloyd Stutz of Anadarko or myself if you should have any questions or require additional information.

Sincerely,

Don S. Hamilton

Environmental Manager / Project Coordinator

cc. Mr. Lloyd Stutz, Anadarko Mr. Jim Hartley, Anadarko

Job 195

Attachments

 Injection wells shall be completed, equipped, operated, and maintained in a manner that will prevent pollution and damage to any USDW, or other resources and will confine injected fluids to the interval approved.

Anadarko Petroleum Corporation will complete, equip, operate, and maintain this injection well in compliance with *The Oil and Gas Conservation—General Rules*, and pending *Underground Injection Control Permit.* Furthermore, Anadarko Petroleum Corporation will maintain their high-standard of pollution control and waste management to any Underground Sources of Drinking Water, non-approved injection intervals and other resources.

The application for an injection well shall include a properly completed UIC Form 1 and the following:

A properly completed UIC Form 1 has been previously submitted to the Division of Oil, Gas and Mining on October 25, 2000 and was noticed for public comment following receipt of the document by the Division of Oil, Gas and Mining. A copy is being included for your reference (see attachment 1 of 11).

2.1 A plat showing the location of the injection well, all abandoned or active wells within a one-half mile radius of the proposed well, and the surface owner and the operator of any lands or producing leases, respectively, within a one-half mile radius of the proposed injection well.

Detailed plats and maps have been previously submitted to the Division of Oil, Gas and Mining on October 25, 2000 detailing all wells, owners, operators and producing leases within a one-half mile radius of the proposed injection well. A copy is being included for your reference (see attachments 2 of 11).

2.2 Copies of electrical or radioactive logs, including gamma ray logs, for the proposed well run prior to the installation of casing and indicating resistivity, spontaneous potential, caliper, and porosity.

The following electrical or radioactive logs are being submitted at this time:

Compensated Density, NeutronGamma Ray log – (see attachment Log 1 of 4)

Dual Induction Guard Log Gamma Ray – (see attachment Log 2 of 4)

2.3 A copy of the cement bond or comparable log run for the proposed injection well after casing was set and cemented.

A cement bond log completed after the casing was set and cemented is being submitted at this time:

Cement bond log – (see attachment Log 3 of 4)

2.4 Copies of logs already on file with the division should be referenced, but need not be refiled.

We are not aware of any other electrical or radioactive logs that have been previously submitted to the Division of Oil, Gas and Mining under separate cover.

2.5 A description of the casing or proposed casing program of the injection well and of the proposed method for testing the casing before use of the well.

A brief description of the casing and cement program for this well is being submitted at this time (see attachment 3 of 11). A description of the casing testing that was witnessed by Dennis L. Ingram has previously been submitted. A copy is being included for your reference (see attachment 4 of 11).

2.6 A statement as to the type of fluid to be used for injection, its source and estimated amounts to be injected daily.

The fluid to be injected into this well will be a composite of waters gathered from existing and proposed wells within the Clawson Springs Field that extract water from the Ferron coal seams. A list of wells that will potentially deliver water to the injection well has been included (see attachment 5 of 11). It is estimated that a maximum of 14,000 barrels of water will be injected daily.

2.7 Standard laboratory analyses of (1) the fluid to be injected, (2) the fluid in the formation into which the fluid is being injected, and (3) the compatibility of the fluids.

The following laboratory analyses have been included with this application:

- (1) the fluid to be injected (see attachment 6 of 11)
- (2) the fluid in the formation (see attachment 7 of 11)
- (3) the compatibility of the fluids (see attachment 8 of 11)
- 2.8 The proposed average and maximum injection pressures.

An average and maximum of 14,000 barrels of water per day at an average and maximum pressure of 1,400 psig is proposed for this injection well.

2.9 Evidence and data to support a finding that the proposed injection well will not initiate fractures through the overlying strata or a confining interval that could enable the injected fluid or formation fluid to enter the fresh water strata.

The Navajo Formation is overlain by approximately 585 feet of Carmel Formation with some shale, minor salt, anhydrite and abundant sandstone with very low porosity and subsequently very low permeability. The Carmel is too tight to transmit fluid through it and any fractures that might be initiated in the Navajo formation will not propagate up through the Carmel Formation to the overlying formations.

2.10 Appropriate geological data on the injection interval and confining beds, and nearby Underground Sources of Drinking Water, including the geologic name, lithologic description, thickness, depth, water quality, and lateral extent; also information relative to geologic structure near the proposed well which may effect the conveyance and/or storage of the injected fluids.

An independent evaluation has been completed on the injection interval, confining beds, and nearby Underground Sources of Drinking Water that also provides detailed information on the geologic name, lithologic description, thickness, depth, water quality, lateral extent and structures which may effect the conveyance and/or storage of the injected fluids (see attachment 9 of 11). Furthermore, a stratigraphic cross-section (see attachment 10 of 11) and isopach map (see attachment 11 of 11) prepared by Anadarko Petroleum Corporation provide detailed site-specific information about the lithologic description, thickness, depth and lateral extent of the formations to be injected into.

2.11 A review of the mechanical condition of each well within a one-half mile radius of the proposed injection well to assure that no conduit exists that could enable fluids to migrate up or down the wellbore and enter improper intervals.

The proposed Clawson Springs State H-2 production well is located approximately 1,000' Northwest of the proposed injection well but has only been completed into the Ferron Coals and Sands. The Ferron Coals and Sands are stratigraphically several thousand feet above the proposed injection interval with numerous confining layers between the injection and production zones.

2.12 An affidavit certifying that a copy of the application has been provided to all operators, owners, and surface owners within a one-half mile radius of the proposed injection well.

An affidavit has been previously submitted to the Division of Oil, Gas and Mining following notices being submitted to all operators, owners, and surface owners within a one-half mile radius of the proposed injection well.

2.13 Any other additional information that the board or division may determine is necessary to adequately review the application.

No additional information has been requested by the board or division at this time but can be made available upon request.

List of Attachments

Attachment 1 Application for Injection Well – UIC Form 1

Attachment 2 Plats and Maps

Attachment 3 Casing and Cement Description

Attachment 4 Casing Testing Description

Attachment 5 Potential Sources of Water

Attachment 6 Source Water Analysis

Attachment 7 Formation Water Analysis

Attachment 8 Compatibility Study

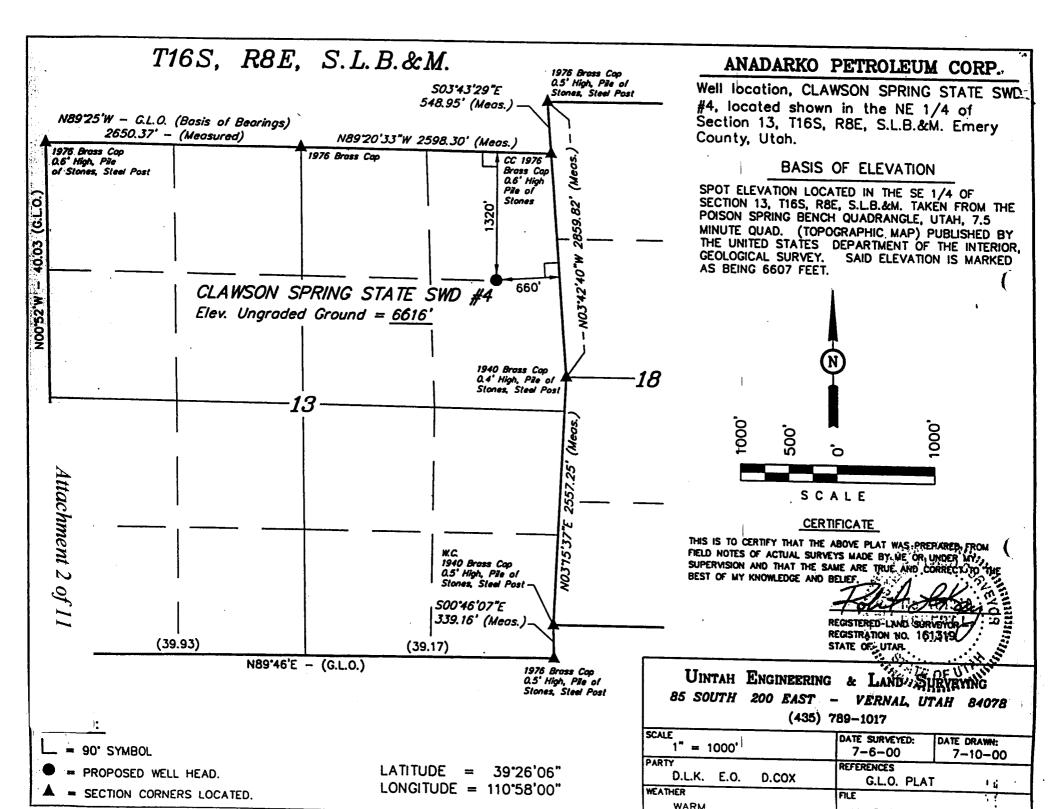
Attachment 9 Hydrogeologic Assessment – Helper Field

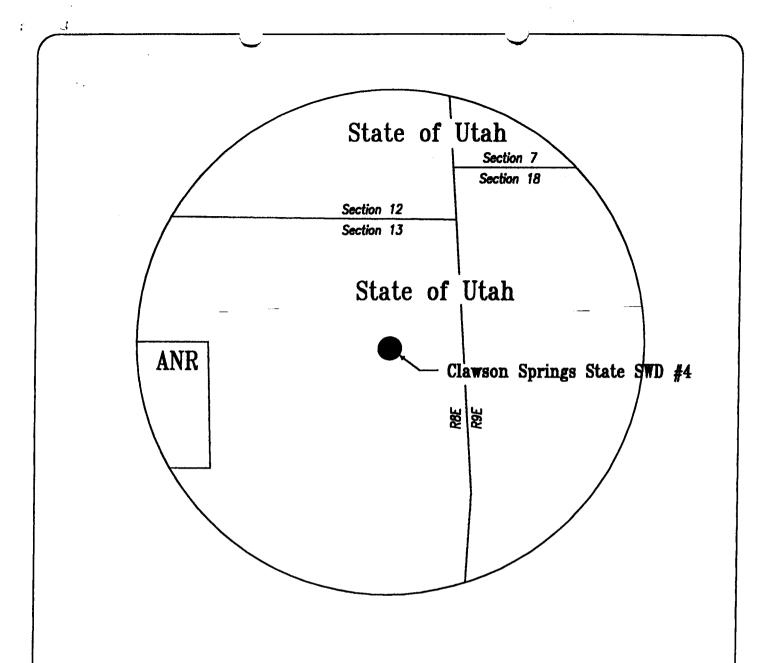
Attachment 10 Stratigraphic Cross-Section

Attachment 11 Isopach Map

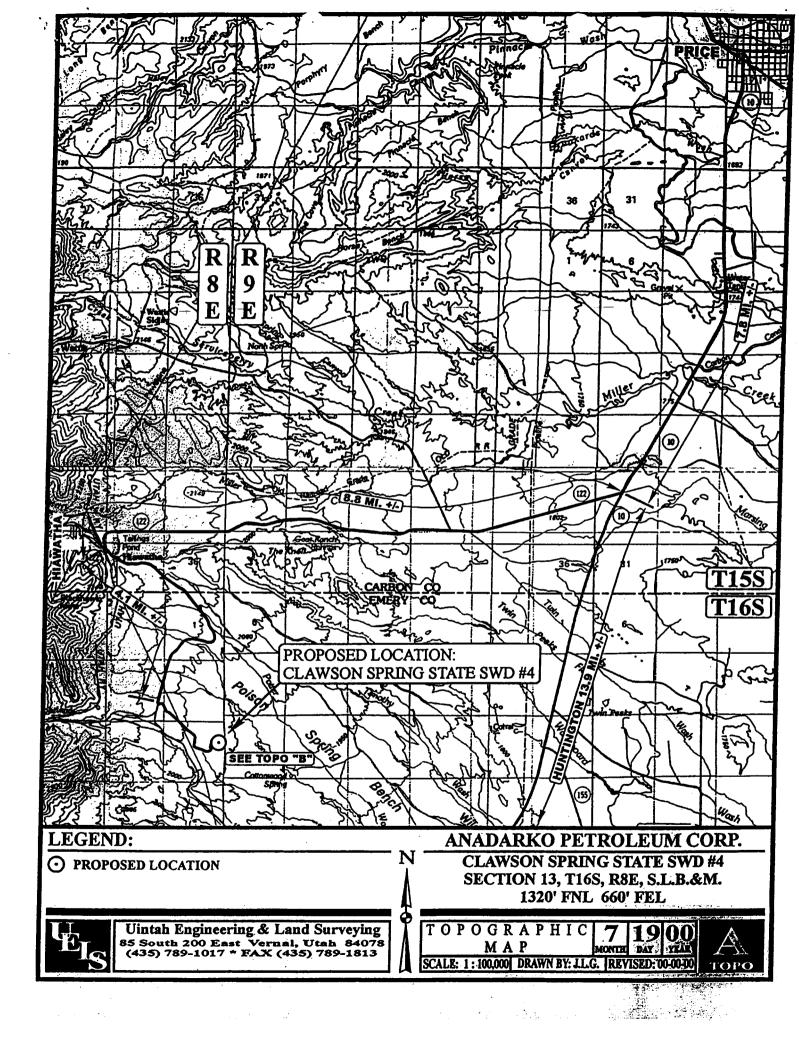
STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING

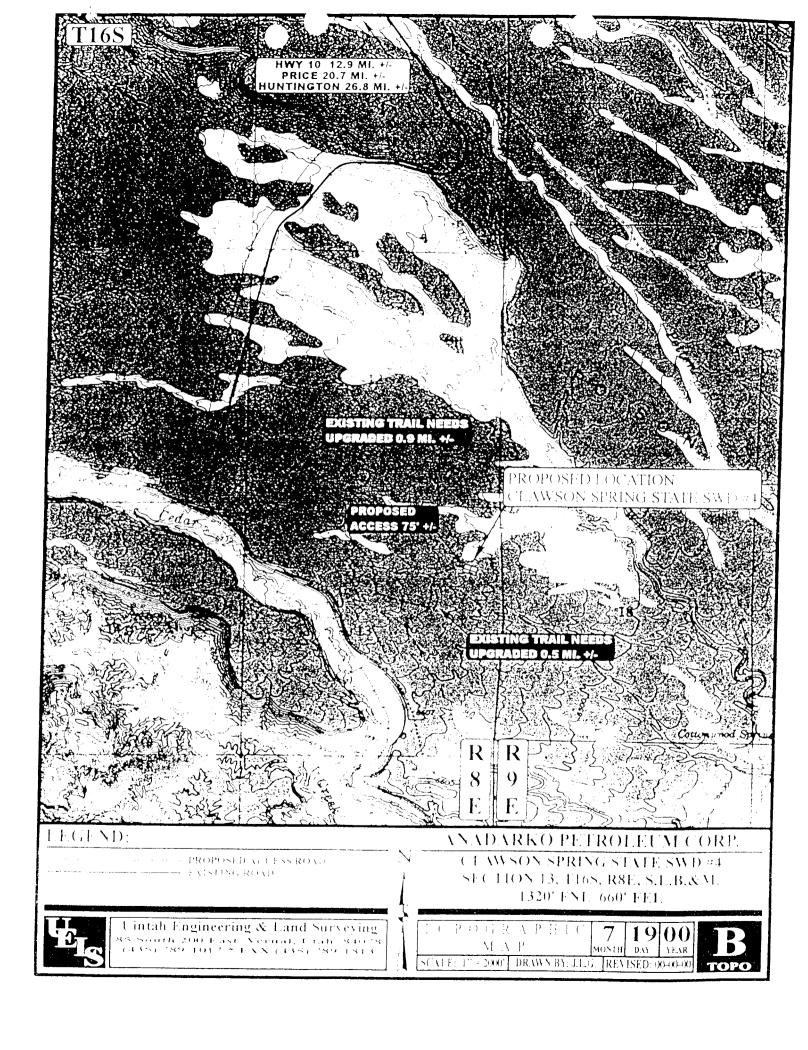
	APPLICATION FO	OR INJECTION WE	=11
Name of Operator		Utah Account Number	Well Name and Number
Anadarko Petroleum Corporation		N	
Address of Operator		Phone Number	Clawson Springs State SWD-4 API Number
60 South 700 East, Unit 1, Pric	xe, Utah 84501	435-637-3044	43-015-30477
Location of Well			Field or Unit Name
Footage :		County:	Clawson Sorings
OO. Section Township Range: E/2 No.	NL 660' FEL	Emerse	Lease Designation and Number
QQ, Section, Township, Range: E/2 NE	74, Sec. 13, T16S, R8E	State: UTAH	ML-48217
Is this application for expansion of an ex	disting project?	Yes X	No [7]
<u>:</u>	, spiologi	165 [X]	No 📗
Will the proposed well be used for:	Enhanced Recovery?	Yes 🔲	No X
	Disposal?	Yes 🛛	No 🗇
	Storage?	Yes 🗍	
	-totago:	165	No 🔀
s this application for a new well to be dri	lled?	Yes X	No 🗍
·			
f this application is for an existing well, h Date of test:pending	as a casing test been perfor	med? Yes 🗌	No 🗌
roposed injection interval: from	7300' to	825'	Upper Navajo Bench 7300' – 7390' Middle Navajo A 7435' – 7500' Middle Navajo B 7515' – 7565'
roposed maximum injection: rate	14,000 bpd pressure		Lower Navajo 7600' - 7645' Kayenta 7665' - 7715' Wingate 7750' - 7825'
roposed injection zone contains oil 🔲, g	as [], and / or fresh water [☐ within ½ mile of the we	•
st of attachments: Surface Owner	ship Plat, Civil Plat an	d Topographic Maps	
ATTACH	ADDITIONAL INFORMATION	ON AS REQUIRED BY C	URRENT
UT	AH OIL AND GAS CONSER	VATION GENERAL RUL	ES
by certify that this report is true and complete to in the	st of my knowledge.		
ame (Please Print)	Lan	Title Field	Foremen
gnature Time			





DSH LWJ	Talon Resources, Inc. 375 South Carbon Ave.
10/18/00	Price, Utah
1"=1000"	Phone (435) 637–8781 Fax (435)636–8603
197	ANADARKO
L1	Petroleum Corporation Section 13, T168, R6E, SLB&M Surface Concrete Plat - 519-4





Casing Program

String	Hole			Casing			Connection
Туре	Size	Depth	Feet	Diameter	Weight	Grade	Туре
Surface	17-1/2"	325'	315'	13-3/8"	48#	H-40	ST&C
Intermediate	12-1/4"	3779'	3732'	9-5/8"	40#	J-55	LT&C
Production	7-7/8"	8320'	8320'	7"	26#	N-80	LT&C

String Type	DV Depth	Stage Lead/Tail	Cement Top	Number Sacks	Cement Type	Cement Yield	Cement Weight
Surface		Lead	Surface	390	Class G	1.16	15.80
Intermediate	None	Lead		460	Hi Lift	3.84	11.00
Intermediate		Tail	Surface	175	Class G	1.16	15.80
Production	7091'	Lead		321	Class G	1.15	15.80
		Lead		350	Hi Lift	3.84	11.00
		Tail	4100'	75	Class G	1.15	15.80

Well Name	CSS SWD #4	Zone/Perfs	Тор	Bttm	Cag. Sz	Grade	WŁ.	Jts.	Depth
County/St	EMERY, UT		7616'	8080,	7"	N80	17#		8320'
Date	11/30/00	 							
Date AFE/Loc#	20524/128798								
	ORIGINAL								
Reason	COMPLETION	1 I	l	L					
					Tbg Sz	Grade	Wt.	Jts.	Depth
	1								
TI	B 8320"	PBTD	8220	KB	13"	SN		ANCHOR	
Test information									
Check boxes that apply			Fill in shaded boxes				, .		
Basic Data	SITP		SICP		FTP		FCP	L	
			1		,		,		l and the second
Swab	#FL		FFL		Hrs		1 l	L	Last 2hrs (BFPH)
Flow	,		1	·	•				
	Choke		Hrs	<u> </u>	j				
Pumping	,		1		1			 ,	
- undand	Unit		l sr		SPM		Hrs	L	1
Sub Pump			1		,				
our rump	Choke		Hrs	L	1				
☐ Plunger Lift	_	_	ı	F	1				
gur tillt	Cycles/Day	I	Hrs/Flow	L	1				
L			ł		1	r	1		
Production	ВО		BW	<u> </u>	MCF		t		
			loor e						
Total Fluid Recovered			BBLS						
	Decides David		BBLS						
1	Previos Day LTR		1						
1	End of Day LTR		BBLS						
1	Liu or Day LIK	<u> </u>	1						
Remarks									
- verine Re			<u> </u>						
	· · · · · · · · · · · · · · · · · · ·								
Activity details									
DILLAND THE DALL AND DE	JOLINE TBG TO 7411	BTM OF PKR.	(234 JTS 3-1/2" DUOLIN	E TBG). R	U AND PU	MP PKR FLUID DOWN CSC	3. ND BOP, NU KTH.	SPACE OUT AND	SET PKR W/5K
COMPRESSION, SET TEC	G IN KTH SLIPS. RU A	IND PRESSURE	UP ON CSG TO 1000 PS	SIG AND H	OLD FOR	30 MIN TEST "OK". TEST V	WII NESSED BY STAT	E OF U IAH, DE	WIND RIGHAM, KU
AND MOVE OFF LOCATION	UN ERD UN REPORT	J .							
l									
}									
			1	Roc	d String			ESP Details	
	Prior day CC		Size		Grade	Feet	1	Depth	Model
Vendor	Work done	1	3/4"	T		T	Pump		
· · · · · · · · · · · · · · · · · · ·	treatment	1	7/8"	1	<u> </u>		intake		
CANNON 2	rig	1	1 1/4"		PR .		Seal		
WEATHERFORD	bop	1	1.1/2"	oxdot	WB		Motor		L
M.D. TALBOTT	supervision	1					4	_	
DUOLINE	THREAD MAN	1				L	Cable size model		
DOUBLE JACK	PRESS TEST	1	Rod Subs				DHI Sensor depth		
NIELSON	water	1	I				Dane		PSi PSi
NIELSON	trucking	1	1				PBHP SBHP		
CHAMPION	CHEMICALS	1	Dupon Information				SBHP Misc. Information		
ĺ	contingency 10%		Pump Information						···
I	Daily Total		4				I		
L	Cumulative cost	<u> </u>	<u> </u>						
						Report submitted by		M.D. Talbott	

Potential Sources of Water - CCS SWD-1 and CCS SWD-4

Clawson Springs State A-1 Clawson Springs State A-2 **A-3** Clawson Springs State Clawson Springs State A-4 Clawson Springs State A-6 Clawson Springs State A-7 Clawson Springs State **A-8** Clawson Springs State **B-1 B-2** Clawson Springs State Clawson Springs State **B-3 B-4** Clawson Springs State Clawson Springs State **B-5 B-6** Clawson Springs State **B-7** Clawson Springs State **B-8** Clawson Springs State Clawson Springs State B-9 Clawson Springs State **C-2** C-3 Clawson Springs State Clawson Springs State **C-4** Clawson Springs State C-6 C-8 Clawson Springs State Clawson Springs State D-5 Clawson Springs State **D-6 D-7** Clawson Springs State Clawson Springs State D-8 E-1 Clawson Springs State E-2 Clawson Springs State Clawson Springs State E-3 Clawson Springs State E-4 Clawson Springs State E-5 E-6 Clawson Springs State Clawson Springs State E-7 E-8 Clawson Springs State Clawson Springs State F-1 Clawson Springs State F-2 Clawson Springs State G-1 G-2 **Clawson Springs State** H-1 Clawson Springs State Clawson Springs State H-2 Clawson Springs State J-1 Pierucci 1 Potter 1 Potter 2 IPA-1 IPA-2

Note: See attachment 11 of 11 for the approximate location of each production well



2080 SOUTH 1500 EAST VERNAL UTAH 84078

Water Analysis Report

Telephone (435) 789-4327

Customer: Anaderko Petroleum Corporation

Postal Code:

Address:

City: Price

State: UT

Attention: Jim Hartley

cc1: Dan Victor

cc2: Greg Strickland

cc3: Lloyd Sutz

Comments: Acid gases not ran in field.

Date Sampled: 29-Nov-00

Date Reported: 07-Dec-00

Date Received: 30-Nov-00

Fleid: Clawson Springs

Leace: Clawson Springs

Location: Clawson Springs State A-1

Sample Point: Wellhead injectate

Salesman: Ed Schwarz

Analyst: Karen Hawkins Allen

CATIONS ANIONS

Calcium: 208 mg/l Chloride: 4.400 mg/l

Manneskum: 190 mg/l Carbonate: 1,537 mg/l Sarium : mg/i Bicarbonate: 3,294 mg/l

Strontlum: mg/l Sulfate: 108 mg/l

Iron: 14.0 ma/l

Sodkum: 3548 mg/l

pH (field): 9.55 Specific Gravity: 1.0100 grams/mi

Temperature: 85 degrees F **Total Dissolved Solids:** 13,299 ppm

ionic Strength: 0.18 CO2 in Water: mo/f 1

CO2 in Gas: 0.03 mole % Recistivity: ohm/meters

H28 In Water: 3.0 mg/l Ammonia:

Dissolved Oxygen: DDM ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI: 3.04 Calcite PTB: 181.7 Calcite (CaCO3) 81 @ 100 F: 3.20 Calcite PTB @ 100 F: 181.7 Calcite (CaCO3) 81 @ 120 F: 3.41 Calcita PTB @ 120 F: 181.8 Calcite (CaCO3) 81 @ 140 F : 3.63 Calcite PTB @ 140 F : 181.8 Calcite (CaCO3) SI @ 160 F: 3.85 Calcite PTB @ 160 F: 181.8 Gypsum (Ca8O4) Si: -2.19

Gypsum PTB: N/A Berite (B#804) SI: N/A Barite PTB: N/A

Celestite (SrSQ4) SI: N/A Celestite PTB: N/A

Confidential

Attachment 6 of 11



2060 SOUTH 1500 EAST VERNAL, UTAH 84078

Telephone (435) 789-4327

Water Analysis Report

Customer: Anadarko Petroleum Corporation

Address :

City: Price

UT

Postal Code:

Jim Hartley

cc1: Dan Victor cc2: Greg Strickland

cc3: Lloyd Sutz

Comments: Acid gases not ran in field.

Date Sampled: 29-Nov-00

Date Reported: 07-Dec-00 Date Received: 30-Nov-00

Field: Clawson Springs

Lease: Clawson Springs

Location: Clawson Springs SWD #2

Sample Point: wellhead

CO2 in Gas :

Navajor Kayenta Water Sample

Analyst: Karen Hawkins Allen (Composite)

0.03

mg/l

mole %

CATIONS <u>ANIONS</u>

Caictum : 1,224 mg/i Chloride: 35,000

Magnesium: mg/l 2,440 Carbonate : mg/l

Sarium : mg/l Bicarbonate: 3,172 mg/l Strontium: mg/t Sulfate: 2.545 ma/i

Iron : 14.0 mg/l

Sodium: 23550

: (bleif) Ha 10.24 Specific Gravity: 1.0500 grams/m1

Temperature: 85 degrees F **Total Dissolved Solids:** 68,028 DOM ionic Strength;

1.09 CO2 in Water: 1 ma/l

Resistivity: ohm/meters H28 In Water: 7.0 mg/l

Ammonia: ppm Dissolved Oxygen: ppm

Si calculations based on Tomsen-Oddo parameters

Calcite (CaCO3) SI: 2.91 Calcite PTB: 1062.7 Calcite (CaCO3) 81 @ 100 F: 3.06 Calcite PTB @ 100 F : 1064.9 Calcite (CaCO3) 81 @ 120 F : 3.28 Calcite PTB 2 120 F: 1067.0 Calcite (CaCO3) SI @ 140 F; 3.49 Calcite PTB @ 140 F: 1068.3 Calcite (CaCO3) SI @ 160 F: 3.72 Calcite PTB @ 160 F: 1069.1

Gypsum (CaSO4) SI: -0.46Gypsum PTB: N/A Barita (BaSO4) \$1; N/A Barite PTB : N/A

Celestite (SrSO4) SI: N/A Celestite PTB: N/A



Saturation Index Calculations

Champion Technologies, Inc.

(Based on the Tomson-Oddo Model)

Anadarko Petroleum CorporationClawson Spring

Sample Date

Comments

Brine 1: Clawson Srpings State A-1 Brine 2: Clawson Springs SWD No. 1 Brine 3: Clawson Springs SWD No. 2 November 29, 2000 November 29, 2000 November 29, 2000 acid gasses not ran in the field acid gasses not ran in the field acid gasses not ran in the field

		Brines		Mixing Ratio as %									
	Brine 1			10	20	70	70	40	30	30	50	25	25
Component		Brine 2		20	10	20	10	30	40	30	25	50	25
(mg/L)			Brine 3	70	70	10	20	30	30	40	25	25	50
Calcium	208	448	1,224	967	943	358	435	585	609	686	522	582	776
Magnesium	190	126	83	102	109	167	162	139	132	128	147	131	121
Barium	0	0	0	0	0	0	0	0	0	0	0	0	0
Strontium	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbonate	1,537	0	2,440	1,862	2,015	1,320	1,564	1,347	1,193	1,437	1,379	994	1,604
Bicarbonate	3,294	1,012	3,172	2,752	2,980	2,825	3,041	2,573	2,345	2,561	2,693	2,123	2,663
Sulfate	108	3,095	2,545	2,411	2,113	949	894	1,735	2,034	1,979	1,464	2,211	2,073
Chloride	4,400	24,800	35,000	29,900	27,860	11,540	12,560	19,700	21,740	22,760	17,150	22,250	24,800
CO ₂ in Brine	1	150	1	31	16	31	16	46	61	46	38	76	38
Ionic Strength	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
Temperature (°F)	85	85	85	85	85	85	85	85	85	85	85	85	85
Pressure (psia)	100	100	100	100	100	100	100	100	100	100	100	100	100

Saturation Index

| Calcite | #NAME? |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Gypsum | #NAME? |
| Hemihydrate | #NAME? |
| Anhydrite | #NAME? |
| Barite | #NAME? |
| Celestite | #NAME? |

PTB

| Calcite | #NAME? |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Gypsum | #NAME? |
| Hemihydrate | #NAME? |
| Anhydrite | #NAME? |
| Barite | #NAME? |
| Celestite | #NAME? |



November 24, 1997

Anadarko Petroleum Corporation 17001 Northchase Drive P.O. Box 1330 Houston, TX 77251-1330

ATTN: Mr. Shad Frazier

Subject:

Hydrogeologic Assessment in the Vicinity of Anadarko

Ferron Coalbed Methane Water-Disposal Well Helper State SWD # 1

Dear Mr. Frazier:

This letter-report is a summary of findings of an evaluation of general groundwater quality and hydrogeologic conditions in the vicinity of the Anadarko North Area Ferron Coalbed Methane project in Carbon County, Utah.

Project Background and Scope

It is our understanding that Anadarko has completed water-disposal well Helper State SWD #1 at 1,131' FSL, 2,194' FWL of Section 3, Township 14 South, Range 10 East, in Carbon County, Utah. The well was drilled to a depth of 6,488 feet, and is completed in the Navajo Sandstone and Wingate Sandstone. The well will be used to dispose of water removed from nearby existing and proposed coalbed methane production wells completed in the Ferron Sandstone at depths of approximately 2,100 feet.

The purpose of this report is to provide Anadarko with an independent evaluation of hydrogeologic conditions in the area of the disposal well, specifically those in the Navajo Sandstone Aquifer. The scope of our services included the collection and analysis of available information for permitted water-supply and oil and gas wells within a five-mile radius of the disposal well site, and review and interpretation of available geologic maps and reports for the area. Data sources included:

- Utah Department of Natural Resources Division of Water Rights database, files, and reports
- Utah Department of Natural Resources Division of Water Resources reports
- Utah Division of Oil, Gas and Mining (UDOGM) files
- Utah Geological Survey reports and maps
- U.S. Geological Survey (USGS) database, reports, and maps

Geology of the Navajo Sandstone

The Lower Jurassic Navajo Sandstone is a light-brown to light-gray, thick-bedded to massive, cross-bedded quartzose sandstone. The Navajo is generally fine-grained, clean and friable. The formation contains a few thin lenticular, light-gray limestone beds in the upper part (Witkind, 1995). Navajo exposures range from steep cliffs to rounded knolls and nearly flat terrain. The Navajo Sandstone ranges in thickness from 400 to 1,000 feet along the west flank of the San Rafael Swell, and is projected to be approximately 300 feet thick in the vicinity of Helper State SWD #1 (Hood and Patterson, 1984, Plate 6; attached Figure 1). In the vicinity of Helper, the Navajo Sandstone strikes generally northeast and dips from 3 to 7 degrees west (Witkind, 1988).

Groundwater Occurrence

Groundwater in the area north of the San Rafael Swell occurs under confined, unconfined, and perched conditions. Most water in the unconsolidated surficial deposits is unconfined and saline, due to dissolution of evaporite minerals. Perched conditions occur in partially or fully-saturated strata underlain by less-permeable, unsaturated rocks. Water in consolidated strata such as the Navajo Sandstone is unconfined in and near outcrops around the perimeter of the Swell, where recharge to the aquifer occurs (see attached Figure 2). Downgradient and downdip from the recharge areas, the water level in the confined aquifer intersects the contact with an overlying confining layer, and groundwater is under confined conditions. In the San Rafael Swell, the Carmel Formation serves as the confining layer above the Navajo Sandstone.

Groundwater Movement

According to information extrapolated from Hood and Patterson (1984, Plate 5) the potentiometric surface of groundwater in the Navajo Sandstone is approximately 5,100 feet above mean sea level (about 900 feet below ground level) in the vicinity of Helper State SWD #1 (see Figure 2). Groundwater in the Navajo Sandstone is recharged by infiltration into exposures of the formation around the flanks of the San Rafael Swell. Recharge along the west flank flows downdip (westerly) toward Castle Valley (Figure 2). Approximately 20 miles south of Castle Dale, the west-flank groundwater flow in the Navajo splits into north and south components (Hood and Patterson, 1984, Plate 5; Weiss, 1987, Figure 7). The direction of groundwater movement in the Navajo north of the groundwater divide (in the area of Castle Dale) is north-northeast; in the area of Price and Helper groundwater flows east-northeast. Groundwater flow in the Navajo continues clockwise around the north end of the San Rafael Swell, and generally southwest along the east flank of the Swell, until it intercepts and discharges to the Green River.

Based on analysis of shallow (less than 5 feet in depth) bedrock cores and outcrop samples, the porosity of the Navajo Sandstone in the northern San Rafael Swell area ranges

from 3.6 to 26.8 percent (averaging 17.7 percent), and hydraulic conductivities range from 0.0037 to 5.1 feet per day (Hood and Patterson, 1984). As extrapolated from Hood and Patterson's potentiometric contour map (1984, Plate 5; attached Figure 2), the hydraulic gradient of groundwater in the Navajo near Helper is easterly, at 0.0013.

The horizontal rate of groundwater flow (or average linear velocity) can be calculated using a modified form of the Darcy Equation (Freeze and Cherry, 1979):

v = (K/n) (dh/dl)

where:

v = average linear velocity (feet per day) K = hydraulic conductivity (feet per day)

n = porosity (fraction)

dh/dl = hydraulic gradient (feet/foot)

Using the published range of values for K and n and the calculated dh/dl discussed above, the calculated average linear velocity of groundwater in the Navajo Sandstone in the northern San Rafael area may range from 0.007 feet per year (under low conductivity, high porosity conditions) to 67 feet per year (under high conductivity, low porosity conditions). Note that these velocities are not based on site-specific data, but are calculated using hydraulic characteristics of near-surface, weathered samples. It is probable that the velocity of groundwater flow in the formation as a whole, and particularly in the unweathered formation at depth, is more in line with the lower velocity.

Near Caineville (approximately 95 miles due south of Helper), cores of Navajo Sandstone from 1,000 to 2,000 feet below ground surface had an average horizontal hydraulic conductivity (K) of 0.5 feet per day (Hood and Danielson, 1979, pg. 36). Assuming that the K value of these cores is more representative of the hydraulic conductivity of the Navajo at depth in the Castle Dale area, and assuming the 17.7 percent average porosity and 0.0013 hydraulic gradient extrapolated from Hood and Patterson (1984), an average linear velocity of 1.34 feet per year is derived.

Groundwater Use

Deep-source groundwater use in Carbon County is very limited. A review of recorded water rights for the 120 sections within an approximate 5-mile radius of Helper State SWD #1 revealed a total of 675 water rights. Of these, 633 are surface rights on creeks and springs, and 42 are underground water rights for wells. Of the 42 underground water rights, only 10 have Well Driller Reports on file with the Utah Division of Water Rights. Nine of these wells are less than 200 feet deep; the remaining well was drilled by Mountain Fuel Supply to 958 feet and produced brackish water. According to the Utah Division of

Water Rights regional engineer, no water is currently withdrawn from the Navajo Sandstone in Carbon County, and communities rely on surface water and spring flow collected from the Price River and the Wasatch Plateau.

Five test wells were installed in 1981 by Utah Power and Light (UP&L) in Section 1, Township 20 South, Range 9 East and Section 7, Township 20 South, Range 10 East (35 miles south of Helper State SWD #1, see Figure 2). The wells were drilled to the top of the Kayenta Formation and completed in the Navajo at depths ranging from 575 to 882 feet. Navajo thickness ranged from 340 to 404 feet. Although the wells produced water of sufficient quality and quantity for use in UP&L's power plant near Castle Dale, the cost of a conveyance pipeline was determined to be prohibitive, and adequate surface water supplies were available. The wells were donated by UP&L to the Utah Division of Wildlife Resources.

Groundwater Quality

In general, groundwater is saline in much of the northern San Rafael Swell area. Most formations in the Swell contain fresh water only near the recharge areas. Fresh water occurs in the Navajo Sandstone near outcrop areas on the perimeter of the Swell where infiltration of meteoric water flushes out dissolved solids. In most other areas of the northern San Rafael Swell, with increasing distance from recharge areas, water in the Navajo shows degradation by interformational leakage and mixing with saline water from adjacent formations (e.g., the overlying Carmel Formation) which contain gypsum, halite, and other evaporite minerals (Hood and Patterson, 1984).

Water samples collected by UP&L from the Navajo at various depths in the above-mentioned wells were submitted for laboratory analyses of water quality. The analytical results indicate total dissolved solids (TDS) concentrations from 600 to 6,799 milligrams per liter (mg/l). These wells are only 1.5 miles downdip from numerous narrow canyon-bottom exposures of the Navajo, and only 3 miles downdip of broad Navajo exposures with little relief. The relative "freshness" of some of the samples of Navajo groundwater from the UP&L wells is a function of shallow depth and the proximity of the wells to this recharge area.

The salinity of groundwater typically increases with depth of burial and distance from the area of recharge (Freeze and Cherry, 1979, pg. 241-243). This degradation in quality is primarily related to the distance the groundwater has traveled (allowing more time for dissolution of minerals in the formation). Because of this, it is reasonable to expect that water quality in the Navajo Sandstone degrades westward and northward with increasing depth and distance from the outcrop; the Navajo at Helper State SWD #1 is under 6,000 feet of cover and is more than 30 miles downgradient from the nearest recharge area.

According to information on file with the Utah Division of Oil, Gas and Mining, the TDS concentration of groundwater collected from the Navajo Sandstone at the River Gas Corporation Drunkard's Wash injection well D-1 (immediately southwest of Price, Utah) was analyzed at 172,386 milligrams per liter (parts per million [ppm]), which is an extremely saline brine. The Navajo Sandstone at well D-1 is under approximately 5,700 feet of cover, and is about 28 miles north-northwest of the nearest outcrop (recharge area) of the Navajo in the San Rafael Swell. The TDS concentration of water removed from the Ferron Sandstone coal beds at Drunkard's Wash and injected in the Navajo Sandstone at well D-1 is approximately 15,000 ppm; thus, injection of Ferron water actually decreases the salinity of groundwater in the Navajo.

Helper State SWD #1 is perforated across three depth intervals: from 5,920 feet to 6,090 feet and from 6,112 to 6,154 feet (in the Navajo Sandstone); and from 6,256 to 6,320 feet (in the Wingate Sandstone). For the purposes of this report, groundwater in the Wingate Sandstone is not differentiated from that in the Navajo Sandstone Aquifer (i.e., both formations and the interposed Kayenta Formation are considered a single hydrogeologic unit). Groundwater collected from these three zones between November 7 and 12, 1997 contained TDS concentrations of 64,997 ppm, 86,022 ppm, and 107,809 ppm, respectively. A composite sample of water from Anadarko's Ferron Sandstone production wells collected on November 12, 1997 had a TDS concentration of 25,500 ppm. As compared with conditions at Drunkard's Wash, the Navajo groundwater is less saline and the Ferron groundwater is more saline in the vicinity of the Anadarko wells. As at Drunkard's Wash, however, because the Ferron groundwater is more "fresh" than the Navajo groundwater, injection of the produced Ferron water in Helper State SWD #1 will decrease the salinity of water in the Navajo.

Potential Effects of Water-Disposal on Water Quality in the Navajo Aquifer

The effect of Ferron Sandstone groundwater disposal on water quality in the Navajo Sandstone Aquifer in the vicinity of Helper State SWD #1 will depend primarily on the quality of water removed from the Ferron during dewatering and gas production, and the quality of groundwater in the Navajo prior to injection of the Ferron water. Analyses of the Ferron and Navajo groundwaters suggest that injection of saline water from the Ferron may actually improve groundwater quality in the Navajo.

Hood and Patterson (1984, pg. 40) note that the relatively low transmissivity of the Navajo Sandstone results in a restricted cone of depression and steep drawdown under pumping. Because groundwater injection and groundwater withdrawal in confined aquifers have equivalent but inverse effects on the potentiometric surface surrounding the injection or withdrawal point (Freeze and Cherry, 1979, pg. 454), it is reasonable to expect that injection will result in a high, but relatively restricted groundwater mound in the Navajo Sandstone. Considering the upgradient distance to fresher, more usable water in the Navajo (closer to the formation's recharge area 30 miles southeast of Helper State SWD

#1), it is unlikely that injection of Ferron groundwater could adversely affect groundwater quality in the vicinity of future potential water-production sites.

It has been a pleasure to work with you on this project. If you have any questions or require additional information or services, please do not hesitate to call me at (801) 273-2416.

Sincerely,

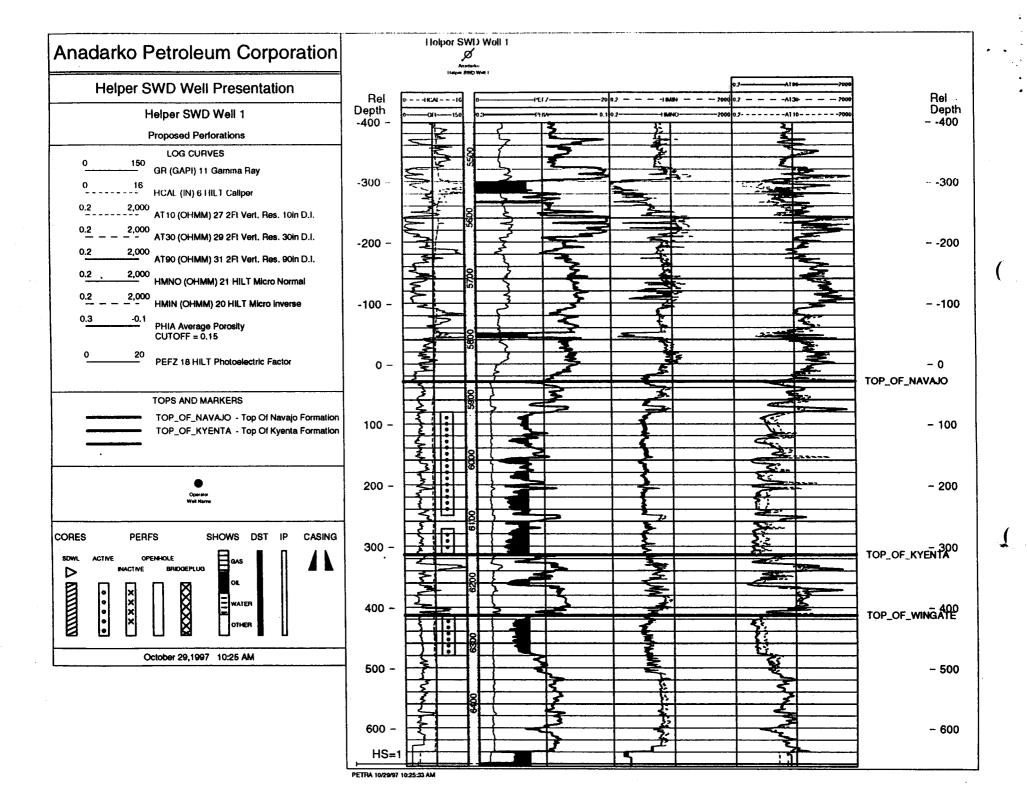
MONTGOMERY WATSON-

John D. Garr, R.G.

Supervising Hydrogeologist

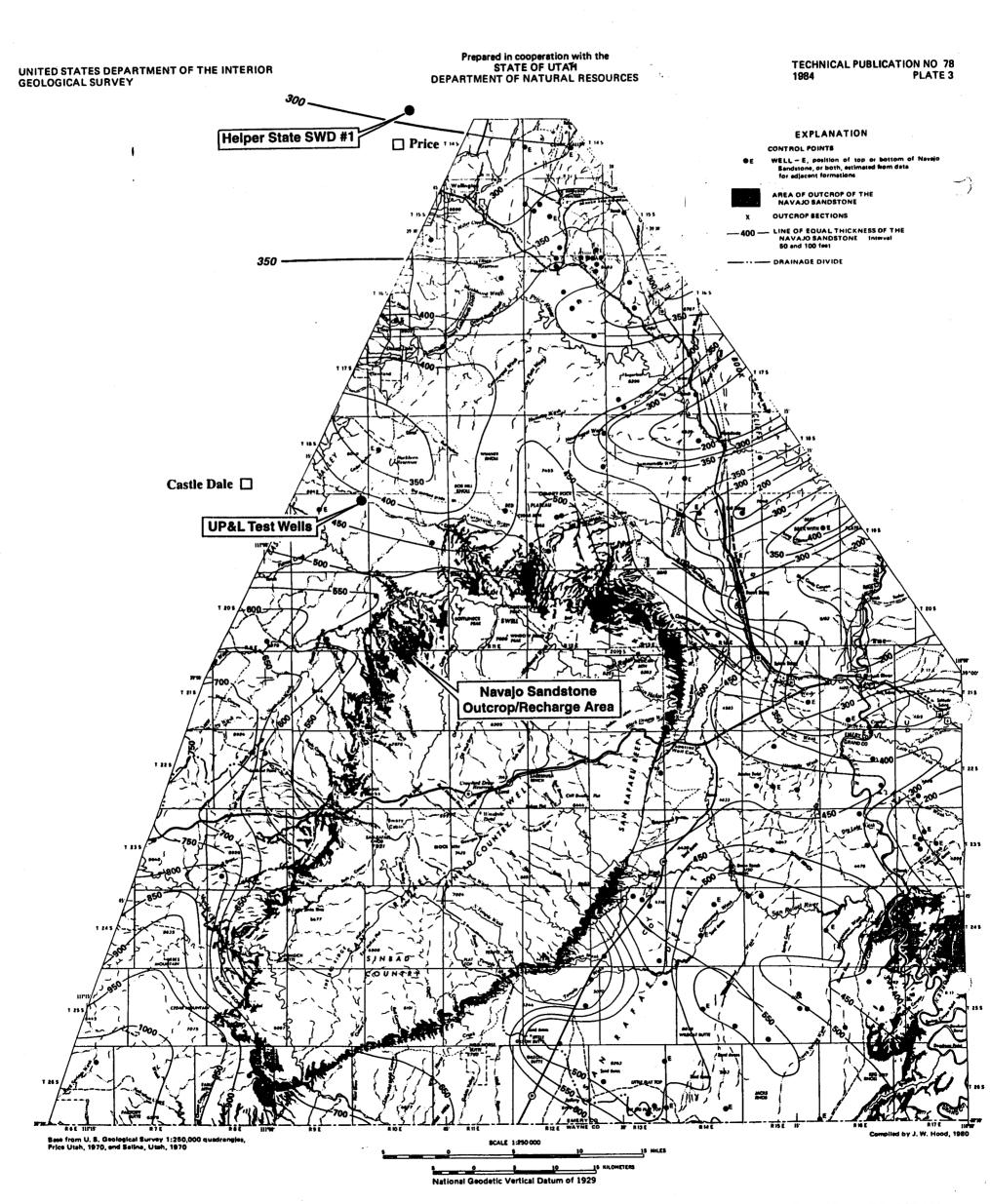
Attachments: Figure 1

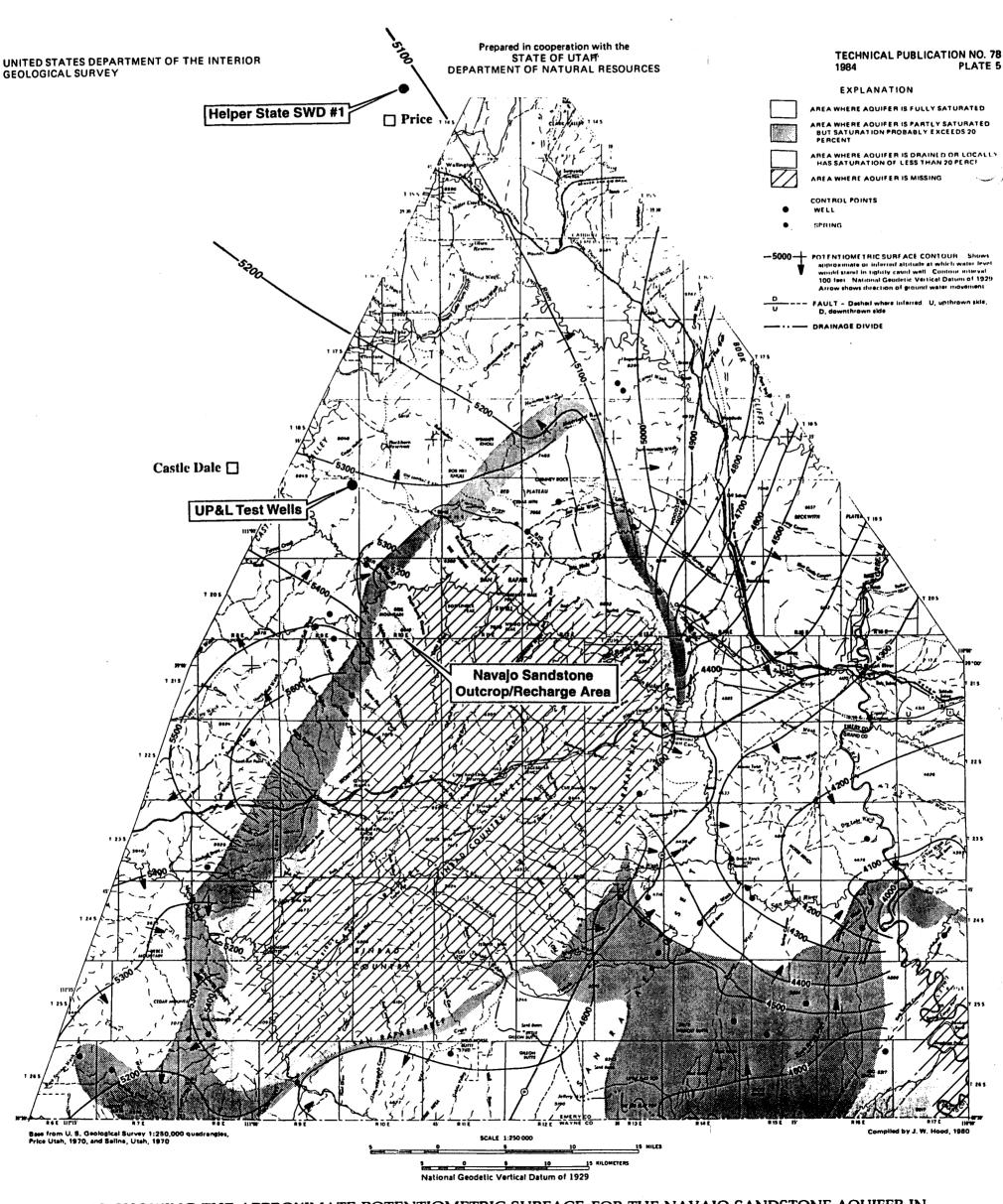
Figure 2



REFERENCES CITED

- Freeze, R.A., and Cherry, J.A., 1979. Groundwater: Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 604 p.
- Hood, J.W., and Danielson, T.W., 1979. Aquifer tests of the Navajo Sandstone near Caineville, Wayne County, Utah: State of Utah Department of Natural Resources Division of Water Rights Technical Publication No. 66, 69 p.
- Hood, J.W., and Patterson, D.J., 1984. Bedrock aquifers in the northern San Rafael Swell area, Utah, with special emphasis on the Navajo Sandstone: State of Utah Department of Natural Resources Division of Water Rights Technical Publication No. 78, 128 p. text, 5 plates.
- Weiss, E., 1987. Groundwater flow in the Navajo Sandstone in parts of Carbon, Grand, Carbon, Wayne, Garfield, and Kane counties, southeast Utah: U.S. Geological Survey Water-Resources Investigations Report 86-4012, 41 p.
- Witkind, I.J., 1988. Geologic map of the Huntington 30' x 60' quadrangle, Carbon, Carbon, Grand, and Uintah Counties, Utah: U.S. Geological Survey Miscellaneous Investigations Series Map I-1764. 1:100,000-scale.
- Witkind, I. J., 1995. Geologic map of the Price 1_x 2_quadrangle, Utah: U.S. Geological Survey Miscellaneous Investigations Series Map I-2462. 1:250,000-scale.





ANADARKO PETROLEUM CORPORATION 17001 NORTHCHASE DRIVE P.O. BOX 1330 HOUSTON, TEXAS 77251-1330 U.S.A. PH. (381) 875-1101



Fax Transmittal

Date /2-18-00

TO: Mike Hebertson

FROM: Keith Buck

PHONE: 301-538- 5333

FAX: . 801- 539-3940

PHONE: 281-873-1319

FAX: #32-601-3/59

SUBJECT: Carmel Anhydrite zones

CC:

Number of pages including cover sheet:

MESSAGE:

Chese are the tops for the three main

Carmel Anhydride zone for wells continued

within the cross section Anadorko sent

to receive disposal parmits. Cross section

runs sw-ne, across emery & carbon cois,

where Please advise if more information is

required. Thanks,

Keth Buck

Carmel Anhydrite Zones

Anhydrite #1: uppermost anhydrite Anhydrite #2: middle anhydrite Anhydrite #3: lowermost anhydrite

Intervals listed in measured depths.

Anadarko Petroleum Corporation Clawson Spring SWD#4

Anhydrite #1

Top: 7014

Bot: 7022

Anhydrite #2

Top: 7092

Bot: 7096

Anhydrite #3

Top: 7272

Bot: 7310

Anadarko Petroleum Corporation

Clawson Spring SWD#1

Anhydrite #1

Top: 7232

Bot: 7242

Anhydrite #2

Top: 7300

Bot: 7308

Anhydrite #3

Top: 7362

Bot: 7402

River Gas Corporation

Utah D-8

Anhydrite #1

Top: 5594

Bot: 5604

Anhydrite #2

Top: 5650

Bot: 5668

Anhydrite #3

Top: 5732

Bot: 5770

River Gas Corporation

Utah D-4

Anhydrite #1

Top: 5590

Bot: 5600

Anhydrite #2

Top: 5644

Bot: 5662

Anhydrite #3

Top: 5744

Bot: 5784

See next page

Anadarko Petroleum Corporation Federal F-2 SWD

Anhydrite #1

Top: 5210

Bot: 5236 (salt below 5236)

Anhydrite #2

Top: 5292

Bot: 5306 (salt below 5306)

Anhydrite #3

Top: 5364 Bot: 5396

Anadarko Petroleum Corporation

Helper State SWD #1

Anhydrite #1

Top: 5470

Bot: 5480

Anhydrite #2

Top: 5518

Bot: 5538

Anhydrite #3

Top: 5596 Bot: 5632

UIC INJECTION PERMIT ANALYSIS TORM

RG49-5-2. Requirements For Class II Injection Wells Including Water Disposal, Storage And Enhanced Recovery Wells,

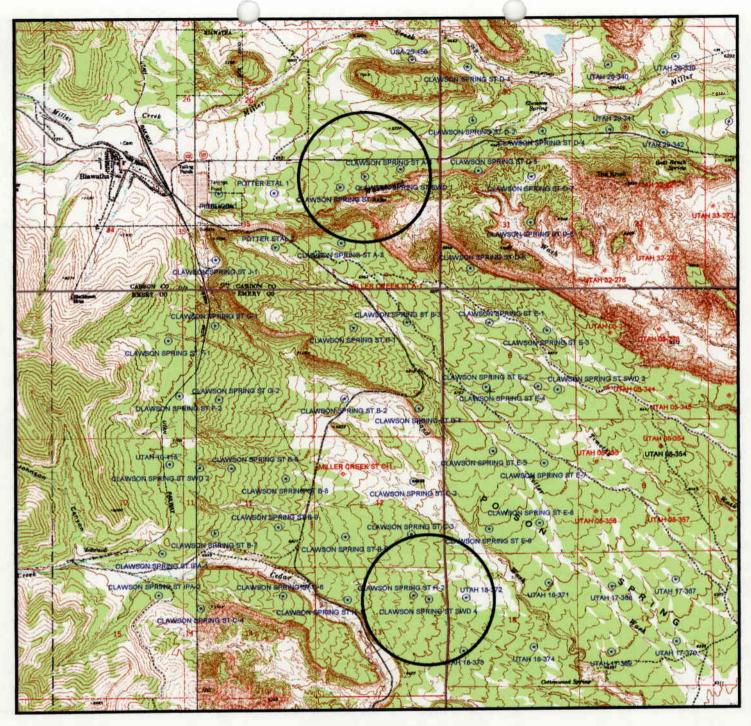
- 1. Injection wells shall be completed. Equipped, operated, and maintained in a manner that will prevent pollution and damage to any USDW, or other resources and will confine injected fluids to the interval approved.
- 2. The application for an injection well shall include a properly completed UIC Form 1 and the following:
- 2.1. A plat showing the location of the injection well, all abandoned or active wells within a one-half mile radius of the proposed well, and the surface owner and the operator of any lands or producing leases, respectively, within a one-half mile radius of the proposed injection well.
- 2.2. Copies of electrical or radioactive logs, including gamma ray logs, for the proposed well run prior to the installation of casing and indicating resistivity, spontaneous potential, caliper, and porosity.
- 2.3. A copy of a cement bond or comparable log run for the proposed injection well after casing was set and cemented.
- 2.4. Copies of logs already on file with the division should be referenced, but need not be refiled.
- 2.5. A description of the casing or proposed casing program of the injection well and of the proposed method for testing the casing before use of the well.
- 2.6. A statement as to the type of fluid to be used for injection, its source and estimated amounts to be injected daily.
- 2.7. Standard laboratory analyses of (1) the fluid to be injected, (2) the fluid in the formation into which the fluid is being injected, and (3) the compatibility of the fluids.
- 2.8. The proposed average and maximum injection pressures.
- 2.9. Evidence and data to support a finding that the proposed injection well will not initiate fractures through the overlying strata or a confining interval that could enable the injected fluid or formation fluid to enter the fresh water strata.
- 2.10. Appropriate geological data on the injection interval and confining beds, including the geologic name, lithologic description, thickness, depth, and lateral extent; also information relative to geologic structure near the proposed well which may effect the conveyance and/or storage of the injected fluids.
- 2.11. A review of the mechanical condition of each well within a one-half mile radius of the proposed injection well to assure that no conduit exists that could enable fluids to migrate up or down the wellbore and enter improper intervals.
- 2.12. An affidavit certifying that a copy of the application has been provided to all operators, owners and surface owners within a one-half mile radius of the proposed injection well.
- 2.13. Any other additional information that the board or division may determine is necessary to adequately review the application.

Completed Items, Needed Items, & Comments

- 1. This section will be complied with.
- 2. Appears to be complete
- 2.1. Needs a Mineral Ownership Plat. Needs a plat showing all current wells. (I will Make a wells plat)
- 2.2. Logs have been filed
- 2.3. Cement Bond log has been provided
- 2.4. This section Okay
- 2.5. Needs a casing design run showing the wellbore as completed.
- 2.6. This section Okay
- 2.7. The compatibility study does not state the results of a precipitate forming or not.
- 2.8. The average injection pressure and maximum injection pressure should not be the same.
- 2.9. This section appears to be Okay.
- 2.10. The cross section lacks the obvious markers defining the anhydrite beds, showing them as the confining zones.
- 2.11. There is no review of the mechanical condition of each well within a half mile.
- 2.12. The Affidavit has been filed.
- 2.13. No other information has been requested as of yet.

OTHER COMMENTS AND OBSERVATIONS: The public notice was published in the Sun Advocate on October 24, 2000 and Cause No. UIC-264.1 was presented before the board on 19-Oct-2000. There were no protests or notices of intervention that were filed concerning this matter.

Reviewed by: K. Michael Hebertson Date: 27-December-2000





Wells

- GAS INJECTION
- GAS STORAGE
- LOCATION ABANDONED
- NEW LOCATION
- PRODUCING GAS
- PRODUCING OIL
- SHUT-IN GAS
- SHUT-IN OIL
- **TEMP. ABANDONED**
- TEST WELL
- △ WATER INJECTION
- **WATER SUPPLY**
- WATER DISPOSAL



Utah Oil Gas and Mining

The State of Utah Division of Oil, Gas & Mining does not guarantee or warrant the accuracy of any data presented herein that is not generated or maintained by the Division. All of the data presented is available in the public sector and can be inspected at the offices of the various divisions or agencies which are responsible for generating the data.



Prepared By: K. M. Hebertson



Michael O. Leavitt Governor Kathleen Clarke Executive Director Lowell P. Braxton Division Director 1594 West North Temple, Suite 1210 PO Box 145801 Salt Lake City, Utah 84114-5801 801-538-5340 801-359-3940 (Fax) 801-538-7223 (TDD)

January 4, 2001

Anadarko Petroleum Corporation 17001 Northchase Dr. P.O. Box 1330 Houston, Texas 77251-1130

Re: Clawson Spring SWD #4 Section 13, Township 16 South, Range 8 East, Emery County, Utah

Gentlemen:

Pursuant to Utah Admin. Code R649-5-3-3, the Division of Oil, Gas and Mining (the "Division") issues its administrative approval for conversion of the referenced well to a Class II injection well. Accordingly, the following stipulations shall apply for full compliance with this approval:

- 1. Compliance with all applicable requirements for the operation, maintenance and reporting for Underground Injection Control ("UIC") Class II injection wells pursuant to Utah Admin. Code R649-1 et seq.
- 2. Conformance with all conditions and requirements of the complete application submitted by Anadarko Petroleum Corporation.
- 3. A fracture gradient will be obtained from the Step Rate Test, and submitted to the Division of Oil, Gas & Mining.
- 4. Conduct a Mechanical Integrity Test.
- 5. A review of the mechanical condition of each well within ½ mile of the proposed location, submitted in table form with casing grades, casing depth, cement volumes, cement type, and cement tops.
- 6. A minerals ownership plat of all mineral interest holders within ½ mile of the injection well.

The above stipulations will be complied with prior to the issuance of a final injection permit. If you have any questions regarding this approval or the necessary requirements, please contact K. Michael Hebertson (801) 538-5333 at this office.

Sincerely,

John R. Baza Associate Director

er cc:

Dan Jackson, Environmental Protection Agency Bureau of Land Management, Price Emery County Commission



State of Utah DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt Governor Kathleen Clarke Executive Director Lowell P. Braxton Division Director

1594 West North Temple, Suite 1210 PO Box 145801 Salt Lake City, Utah 84114-5801 801-538-5340 801-359-3940 (Fax)

801-538-7223 (TDD)

UNDERGROUND INJECTION CONTROL PERMIT

Cause No. UIC-266.1

Operator:

Anadarko Petroleum

Wells:

Clawson Spring State SWD #4

Location:

Section 13, Township 16 South, Range 8 East,

County: Emery

API No.:

43-015-30477

Well Type:

Disposal

Stipulations of Permit Approval

- 1. Approval for conversion to Injection Well issued on January 4, 2001
- 2. Maximum Allowable Injection Pressure: 1,400 psig
- 3. Maximum Allowable Injection Rate: 10,900 BPD
- 4. Injection Interval: 7,616 feet to 8,060 feet (Navajo Sandstone, Kayenta Formation and Wingate Sandstone)

Approved by:

Jøhn R. Baza

Associate Director

1/29/01

DIVISION OF OIL, GAS AND MINING UNDERGROUND INJECTION CONTROL PROGRAM

PERMIT STATEMENT OF BASIS

Well: Clawson Spring SWD #4 **Anadarko Petroleum Corporation** Applicant:

API: 43-015-30477 Sec. 13, T 16 S, R 8 E Emery County Location:

Ownership Issues:

Anadarko Petroleum Corporation is the Mineral owner of the lease where this well is located. The company has notified all of the surface and mineral owners within a half-mile radius of this well that it is being applied for. The well has been published in the Sun Advocate, the Salt Lake Tribune, and the Deseret News. There were no objections or comments received concerning this well.

Well Integrity:

The well is equipped with three strings of pipe which have been cemented in place in the following order:

Surface Casing: 315' 13 3/8", 48Lb/Ft H-40 ST&C, Cemented to surface with 390 sacks of Class G cement 1.16 Cubic Feet per sack, at 15.8 Lbs/gal.

Intermediate Casing: 3,732' 9 5/8", 40#/Ft J-55 ST&C, Cemented to surface with 460 sacks of Hi Lift cement 3.84 Cubic Feet per Sack, and 11.4 Lbs/gal, and 175 sacks of Class G cement 1.61 Cubic Feet per sack, at 15.8 Lbs/gal.

Production Casing: 8,320' 7", 26Lb/Ft N-80 LT&C, Cemented in three stages with 321 sacks Class G cement 1.15 Cubic Feet per sack at 15.8 Lbs/gal, and 350 sacks Hi Lift cement 3.84 Cubic Feet per sack at 11.0 Lbs/gal, and 75 sacks of Class G cement 1.15 Cubic Feet per sack at 15.8 Lbs/gal. Tail cement top is at 4,100', and a DV Tool was set at 7,091'.

Ground Water Protection:

The geology for this location would indicate that the Upper, Middle and Lower Members of the Emery Sandstone are present in the subsurface stratigraphic section in this area of Emery County, and that the probability that one or more of these members would have aquifer qualities is high. No water was encountered in any of these near surface sands while drilling, and a log analysis of the Dual Induction log gamma ray curve indicates that none of the Emery Sands was penetrated. The surface casing was set through this zone and cement was circulated back to surface. The Intermediate Casing was set through to the bottom of the Ferron Sandstone at 3,732' the Ferron sand is the gas productive zone in this field. Cement was also circulated to surface on this section of casing giving added protection to the water of the Ferron and the other near surface sands.

Since there are no known Underground Supplies of Drinking Water in this area the probability that there will be any contamination of water supplies is negligible. The surface and intermediate casing and cementing programs are adequate insurance against the migration of water from the injection zone to the surface. The casing and cement program for the injection zones will provide a suitable barrier for the containment of injected water. There are several hundred feet of 100% bond above the injection zone in the Carmel formation.

The Navajo Sandstone formation water at the subject well was tested at 68,028 mg/l TDS by Champion Technologies of Vernal, Utah. Samples were taken on November 29, 2000. The Navajo Sandstone is a known fresh water aquifer at many locations in the state. In the San Rafael Swell area, the quality of Navajo Sandstone ground water is generally best near the outcrop and recharge areas and poorer with increased depth and distance from recharge [Utah State Department of Natural Resources (DNR) Technical Publication # 78]. This premise has been supported by test results on samples taken from the subject well and other disposal wells in the area. The planned injection of Ferron Sandstone Member produced formation water into the specified formations at this location will result in the dilution of the more saline Navajo Sandstone formation water.

The proposed operation is expected to have little effect on the overall hydrology of the aquifer because of its great extent compared to the volume of fluid that will likely be injected. According to DNR Technical Publication #78, the Navajo Sandstone alone contains approximately 94,000,000 acre-feet of water in transient storage. Injection at a rate of 14,400 barrels per day for 10 years would result in approximately 6,775 acre-feet being injected. This equates to about 0.007% of the water already in storage in the Navajo Sandstone and would require at least 143 disposal wells working round the clock for 10 years to inject 1% of the stored volume in the Navajo Sandstone. As stated by the operator on the application, the maximum injection rate proposed is 10 BPM or 14,400 BPD at maximum 1,400 psig. According to the Evaluation of Drunkards Wash Injection Wells Past and Future Performance report prepared by Tesseract Corporation & Stim-Lab of Duncan Oklahoma, fracture propagation occurs in a downward

direction in the Navajo Sandstone. A hydrogeologic assessment prepared for the operator in 1997, by Montgomery Watson states that "it is unlikely that injection of Ferron groundwater could adversely affect groundwater quality in the vicinity of future water production sites. This is in part controlled by three zones of impermeable Anhydrite overlying the Navajo Formation, which form a seal and thus become the bounding beds of the injection zone. The step rate test indicates that the operator could inject with surface pressures approaching 3000 psi without causing a breach in the Anhydrite bounding beds above the injection zone.

The step rate test for this well was run 12-January-2001, and was conducted in a manner acceptable to the information required for said test. During the test the well was pressured to 500 psig surface recorded pressure, and a break was observed at that pressure indicating that the formation was fractured at that point. The test was then completed with maximum pressures reaching 1,433 psig (surface pressure), at a rate of 7.5 BBLS per minute. ISIP was 154 psi. At the established rate the average daily injection volumes would be about 10,800 BBLS per day, which is short of the 14,000 BWPD applied for. A document supplied by the operator January 23, 2001 states that the formation did not fracture according to their interpretation of the data. The feeling of the Anadarko personnel is that the friction pressure accounted for 600 psig of the 1,433 Lb injection pressure and that "the remaining surface pressure of approximately 833 psig plus the weight of the hydrostatic head of about 3500 psig is not sufficient to create a fracturing gradient at this depth and in this formation."

Based on information gathered from other sources it is possible that the Navajo Formation has two areas of different fracturing gradients, one low gradient if the well is in an area of tension, one high gradient if the well is in an area of compression. It is possible that this well is in a compression area and that the formation did not break down beyond the point where the perforations were cleaned out at 500 psi.

After reviewing applicable information including the application submitted by Anadarko, it is concluded that injection into the Navajo Sandstone, Kayenta Formation, and Wingate Sandstone, at this location, would result in some dilution of the saline water present in the aquifer, and that a pressure increase near the wellbore, created by injection of fluids, would dissipate over time, after injection ceases. No long term negative impacts are anticipated as a result of injection of produced water into the subject well.

Oil/Gas & Other Mineral Resources Protection:

The hydrocarbon and mineral resources of this location consist of the mineral coal, which is saturated with methane gas and water. These resources lie at such a depth that current technology will not allow the mining of the coal due to the excessive amount of overburden, which would need to be propped up or removed to extract the coal. The methane cannot be developed without the ability to dispose of the water that is entrained in the coal and the overlying Ferron Sand. Therefore the development of this well as a disposal well is of utmost importance to the future development of the field.

The coal and methane resource are protected by the intermediate casing and cement, placed such that the casing and cement cover the entire productive zone of the Ferron Sand and associated coal seam. No other known potentially producible mineral or hydrocarbon zones were encountered during the drilling of the well. The injection zone is isolated nearly 3,500' below the productive interval of the Ferron Sandstone.

Bonding:

Anadarko Petroleum Corporation has an \$80,000 Fee Surety Bond in place, which provides coverage for this well.

Actions Taken and Further Approvals Needed:

Notice of this application was published in the Salt Lake Tribune and The (Price, UT) Sun Advocate. In addition, copies of the notice were provided to the EPA, BLM (Price, UT), Carbon County Planning Office, and River Gas Corporation. The notice stated the proposed interval for injection into the Navajo Sandstone, Kayenta Formation, and Wingate Sandstone was from 7,616' to 8,060'.

Note: Applicable technical publications concerning water resources in the general vicinity of this project have been reviewed and taken into consideration during the permit review process.

Reviewer(s): K. Michael Hebertson Date: 25 - January - 2001

Talon Resources, Inc.



Service, Quality and Accuracy

375 South Carbon Avenue A-10

Suite 101 Price, Utah 84501 Phone: 435-637-8781 Cell: 435-650-1401

435-650-1402 435-636-8603

Email: talon@castlenet.com

January 4, 2001

Mr. Michael Hebertson State of Utah Division of Oil Gas and Mining P.O. Box 145801 Salt Lake City, Utah 84114-5801

RE: Requested Information - Application for Injection Well — UIC Form 1 Anadarko Petroleum Corporation - Clawson Springs State SWD 4 1320' FNL 660' FEL, Section 13, T16S, R8E, SLB&M, Emery County, Utah

Dear Mr. Hebertson:

On behalf of Anadarko Petroleum Corporation (Anadarko), Talon Resources, Inc. respectfully submits the following updated original UIC Form 1 and other requested information for permit for an Injection Well within the existing Clawson Springs Field.

Attachment 2 of 11 "Mineral Ownership Plat"

Attachment 3 of 11 "Casing Design Run Depicting the Completed Well Bore"

Attachment 8 of 11 "Compatibility Study Results and Statements"

Attachment 11 of 11 "Review of the Mechanical Condition of Surrounding Wells"

Additionally, Anadarko desires to change the proposed average injection volume and pressures found within section 2.8 of the previously submitted supplemental information to a proposed average volume of 10,000 barrels of water per day and a proposed average pressure of 1,000 psig.

Thank you for your timely review of this application and please feel free to contact Mr. Lloyd Stutz of Anadarko or myself if you have any questions or require additional information.

Sincerely,

Don S. Hamilton

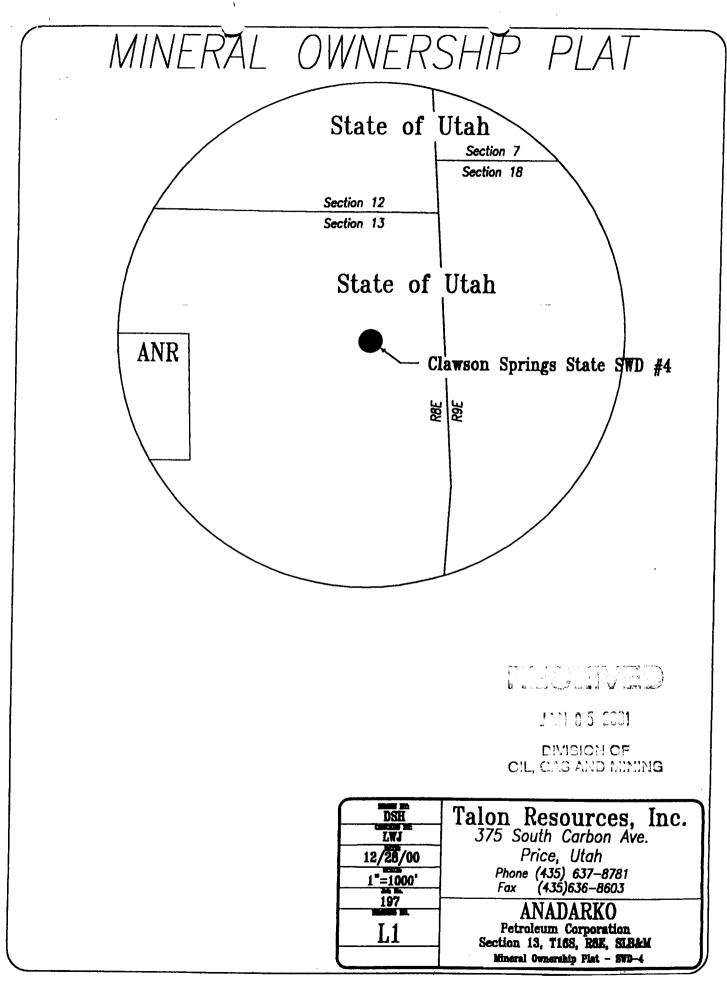
Environmental Manager / Project Coordinator

cc. Mr. Lloyd Stutz, Anadarko Mr. Jim Hartley, Anadarko Job 195

Attachments

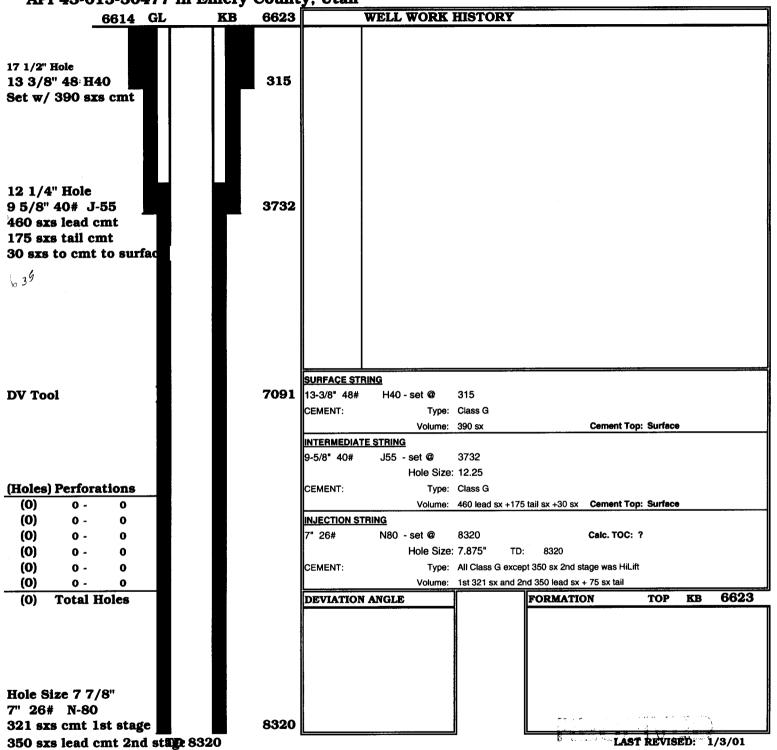
DEMOION OF

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Clawson Springs SWD 4

1320' FNL & 660' FEL Sec 13-T16S-R8E API 43-015-30477 in Emery County, Utah **SPUD RIG OFF SURFACE** 9/21/00 11/9/00



INCLOS CON CILLO CAS AND MINIMA



2060 SOUTH 1500 EAST VERNAL, UTAH 84078

December 29, 2000

435 [|]789 4315

Telephone (435) 789-4327

Mike Hebertson Reclamation Specialist State of Utah Division of Oil, Gas, & Mining

RE:

Anadarko Petroleum Corporation

Clawson Spring Field

Disposal Water Compatibility

Mike.

Water chemistries were analyzed on three sampled waters submitted to Champion Technologies, Inc. District Lab in Vernal, Utah. Samples were from the Clawson Springs State A-1, Clawson Springs SWD No. 1, and Clawson Springs SWD Well No. 2. Analytical parameters were tested by standard bench and wet chemistry methods.

Data from these analyses were placed into a mathematical mixing model to evaluate water compatibility and scaling probability. Mineral scale saturation indices are calculated using a Tomson-Oddo scale prediction model. The Tomson-Oddo uses the cation concentration (calcium, magnesium, barlum, strontium), anion concentration (carbonate, bicarbonate, sulfate), and system parameters such as temperature and pressure to predict mineral scale formation. Note that as system parameters change, so will mineral scale formation tendencies. Please see the attached analytical spreadsheet.

The saturation index is calculated from the Tomson-Oddo scale prediction model. It provides a numerical indication of mineral scaling tendency. A number equal to or less than zero indicates no possibility of mineral scale formation. A number between 0 and 0.5 indicates a slight tendency for mineral scale formation with tendencies increasing as the number gets larger. Note that just because there is a positive scaling tendency does not indicate absolute scale formation, these values are very temperature and pressure dependent. This is only a mathematical model and cannot simulate the system exactly, but is a close approximation.

The PTB (Pounds Per Thousand Barrels) provides a calculated mass of mineral scale that might form based on the saturation index per 1,000 barrels of water. Again, this is only a mathematical model that does not duplicate the system exactly but is a close approximation.

According to the mixing model, saturation indices range from 1.97 to 3.41 for Calcite and 0.99 to 1.12 for Barite. All other mineral scales indicate no scaling tendency. According to the Tomson-Oddo model, formation of Calcite (Calcium Carbonate) and Barite (Barlum Sulfate) is likely to occur. These mineral scales can be prevented from forming and depositing by mineral scale inhibitor application prior to their formation.

If you any questions or need further information, please do not hesitate to call.

Office Phone: 435-789-4327

Cell Phone:

435-828-8193

Regards.

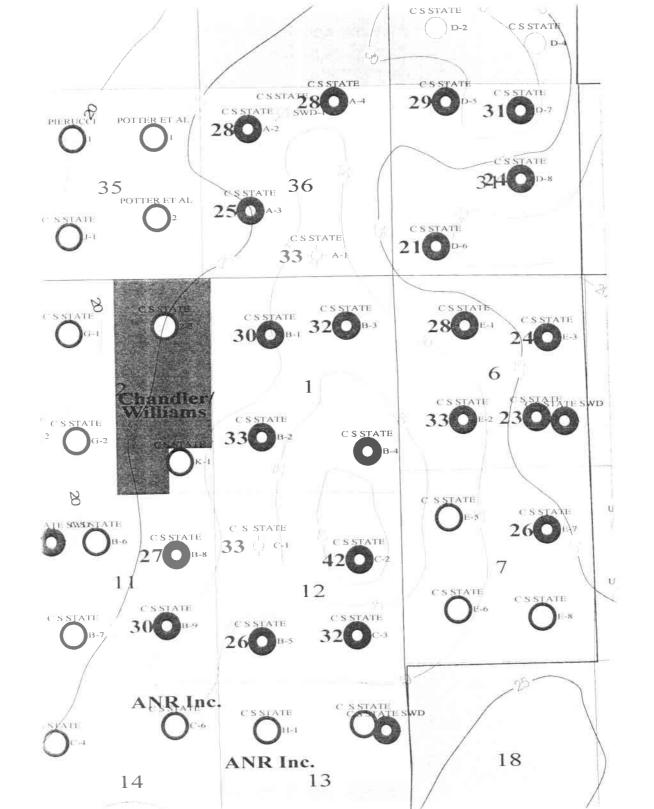
Sr. Technical Service Representative Vernal District Technical Services

Barry Culpepper Ed Schwarz File

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10105 201

DIMICIONIOF CIL, CIU AND AINING



STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING

	APPLICATION FO	R INJECTIO	N WELL				
Name of Operator	Utah Account Nui	mber	Well Name and Number				
Anadarko Petroleum Corporation		N	ľ	Clawson Springs State SWD-4			
Address of Operator		Phone Number		API Number			
60 South 700 East, Unit 1, Price,	Utah, 84501	435-637-304	4	43-015-30477			
Location of Well				Field or Unit	Name		
Fastara		0	ļ	Clawson	Springs		
Footage: 1320' FN	L 660' FEL	County: Em	ery		nation and Number		
QQ, Section, Township, Range: E/2 NE/4	, Sec. 13, T16S, R8E	State: UTAH		ML-48217			
Is this application for expansion of an exist	ting project?	Yes	<u>X</u> 1	lo 🗌			
M. 1849 M. 14							
Will the proposed well be used for:	Enhanced Recovery?	Yes	□ v	lo 🔀 📗			
	Disposal?	Yes	X N	lo 🔲 📗			
	•		<u> </u>				
	Storage?	Yes	<u> </u>	lo 🛚			
Is this application for a new well to be drille	ed?	Yes	l⊠ N	lo 🔲			
If this application is for an existing well, ha	s a casing test been perfor	med? Yes		o 🗆			
•••	o a caomy toot boom ponon			· _			
Date of test:							
•				Perforate	d Intervals		
Decreased intention intention from	7612' to	80601		7616' -	7664		
Proposed injection interval: from _	7612' to			7700' -			
				7780' -			
Proposed maximum injection: rate	14,000 bpd pressure	1,400	psig	7822' -			
				7850' -			
				7874' -	79821		
Proposed injection zone contains oil , g	as \square , and / or fresh water	within 1/2 mile	e of the well.	8040' -	8060 '		
List of attachments. Surface Ownersh	ip Plat, Civil Plat and	Topographic N	Mane				
List of attachments: Surface Ownersh	ip itat, civii itat ak	Topographic i	·EQS				
		-					
	I ADDITIONAL INFORMAT AH OIL AND GAS CONSE						
	AH OIL AND GAS CONSE	RVATION GEN	ERAL RULES) 			
hereby certify that this report is true and complete to the b	est of my knowledge.						
<u> </u>	<i>لد</i> /		milla a mill		were the form the durant tool		
Name (Please Print)	VanTley	Title	Field Forem	arı 🔭			
Signature		Data	1-3.	11			
Signature		Date		<u> </u>			

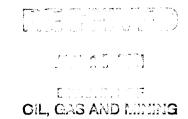
DIVIDION OF OIL, GAS AND MINING

Casing Program

String Type	Hole Size	Hole Depth	Casing Depth	Casing Diameter	Weight	Grade	Connection Type
Surface	11"	325'	325'	8-5/8"	24#	J-55	ST&C
Production	7-7/8"	3442'	3442'	5-1/2"	17#	N-80	8 rds

Cement Program

String Type	DV Depth	Stage Lead/Tail	Cement Top	Number Sacks	Cement Type	Cement Yield	Cement Weight
Surface		Lead	Surface	144	Class G	1.15	15.8
Production		Lead	2250'	130	10-1 RFC	1.61	14.2



Clawson Springs C-3 API 43-015-30463

1320' FSL & 1320' FEL Sec 12-T16S-R8E

SPUD RIG OFF

SURFACE 10/3/00 11/18/00

Emery County, Utah KB 6654 **WELL WORK HISTORY** 6645 GL 11" Hole 325 8 5/8" 24# J-55 144 sxs cmt **TOC** to surface TOC 2250 (Holes) Perforations SURFACE STRING (24) 3060 - 3066 J-55 set @ 325 8-5/8" 24# 3090 - 3094 Hole Size: 12.25 (16) (60) 3105 - 3120 CEMENT: Type: Class G Cement Top: Surface Volume: 144 sx (24) 3158 - 3164 (120) 3170 - 3200 PRODUCTION STRING 5-1/2" 17# N-80 set @ 3442 Hole Size: 7.875 TD: 3442 (244) Total Holes Type: Class G CEMENT: Cement Top: 2250 Volume: 130 sx 6654 **DEVIATION ANGLE** FORMATION TOP KB Hole Size 7 7/8" 5 1/2" 17# N-80 130 sxs cmt

> PBTD 3402 TD 3442

LAST REVISED: 1/3/01

Clawson Springs State H-2

Casing Program

String Type	Hole Size	Hole Depth	Casing Depth	Casing Diameter	Weight	Grade	Connection Type
Surface	11"	315'	305'	8-5/8"	24#	J-55	ST&C
Production	7-7/8"	3297'	3294'	5-1/2"	17#	N-80	8 rds

Cement Program

String Type	DV Depth	Stage Lead/Tail	Cement Top	Number Sacks	Cement Type	Cement Yield	Cement Weight
Surface		Lead	Surface	126	Class G	1.15	15.80
Production		Lead	2050'	150	10-1 RFC	1.61	14.20

Clawson Springs H-2 API 43-015-30467

1148' FNL & 1275' FEL Sec 13-T16S-R8E

SPUD RIG OFF

SURFACE 10/22/00 10/24/00

Emery County, Utah WELL WORK HISTORY 6638 GL KB 6647 11" Hole 305 8 5/8" 24# J-55 126 sxs cmt TOC to surface TOC 2050 (Holes) Perforations 8-5/8" 24# J-55 set @ (0) (0) 0 Hole Size: 12.25 (0)0 -0 CEMENT: Type: Class G (0)0 Volume: 126 sx **Cement Top: Surface** (0)0 -PRODUCTION STRING 5-1/2" 17# N-80 set @ **Total Holes** Hole Size: 7.875 TD: 3297 CEMENT: Type: Class G Cement Top: 2050 Volume: 150 sx 6647 FORMATION DEVIATION ANGLE Hole Size 7 7/8" 5 1/2" 17# N-80 150 sxs cmt LAST REVISED: 1/3/01

> PBTD ? TD 3297

HALLIBURTON ENERGY SERVICES ACQUIRE Version 2,30

CUSTOMER AND JOB INFORMATION

Customer	ANADARKO	Date	12-Jan-2001
Contractor		Consty	CARBON
Lease	SWD	Town	163
Location	PRICE	Section	13
Formation	NAVAHO	Range	0 E
Job Type	STEP TEST	Permit No	
Country	USA	Well No	Ħ
State	utah	Field Name	PERRON

Customer Representative JIN HARTLEY

Halliburton Operator 5. STRWART

Ticket No. 1078105

WELL CONFIGURATION INFORMATION

Packer Type Depth Oft Bottom Hole Temp. 150.0 Deg F

PIPE CONFIGURATION

Vellbore Segment	Neasured Depth	TVD	Casing ID	Casing OD	Tubing ID	Tubing OD
Number	(ft)	(ft)	(inch)	(inch)	(inch)	(inch)
1	7411	7411	6.538	7.000	2.992	3.500
2	1060	8060	4.892	5.500	6.008	0.000

PERFORATIONS

Perforation	Top	Bottom	Shots per
Interval	(ft)	(ft)	(ft)
1	7616	88 6D	Ò

REMARKS ABOUT JOB

NOTICE: THIS REPORT IS DASED ON SOUND ENGINEERING PRACTICES. BUT DECAUSE OF VARIABLE WELL CONDITIONS AND OTHER INFORMATION WHICH MUST BE BELIED UPON. MALLIBURTON WARES NO WARRANTY. EXPRESSED OR INFLIED, AN TO THE ACCURACY OF THE DATA OR UP ANY CALCULATIONS OR OFFICIALS DESCRIPTIONS EXPRESSED HEREIN. YOU AGREE THAT HALLIBURION SHALL NOT BE LIABLE FOR ANY LOSS OR DANAGE, WHITHER DUE TO HEGLIGENCE OR OTHERWISE ARISING OUT OF OR IN CONNECTION WITH SUCH MATA. CALCULATIONS OR OFFINIORS.

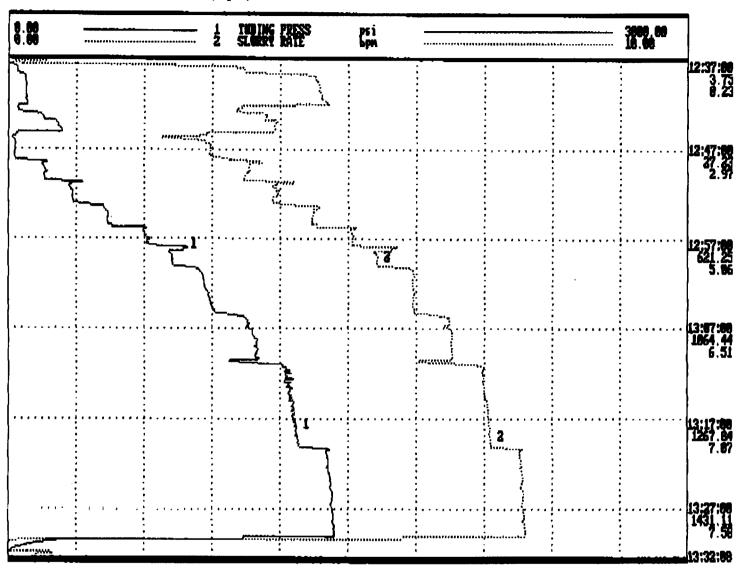
HALLIBURTON	JOB SU	MARY				1078105			1/12/	01		
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\$. STEWART / 122306	2.6	 										+
J. HATCH / 122114	1 2.6											
G. HARREL / 219895	2.6											_
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Acid Type	Gal.	* ====	Tbg./D.	P		8.20	3.50	" +	· V.	7,556	L	450
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LEAVE LOCATION					1	+							· · · · · · · · · · · · · · · · · · ·	
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Customer: ANA 10 Hell Desc: Side 54 Formation: NAVISTO Dater 12-Jan-2001 Ticket #: 1078165 Job Type: STEP TEST

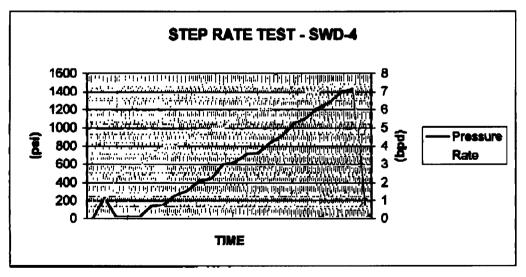
1. Tubing Press 2. Slurry Rate

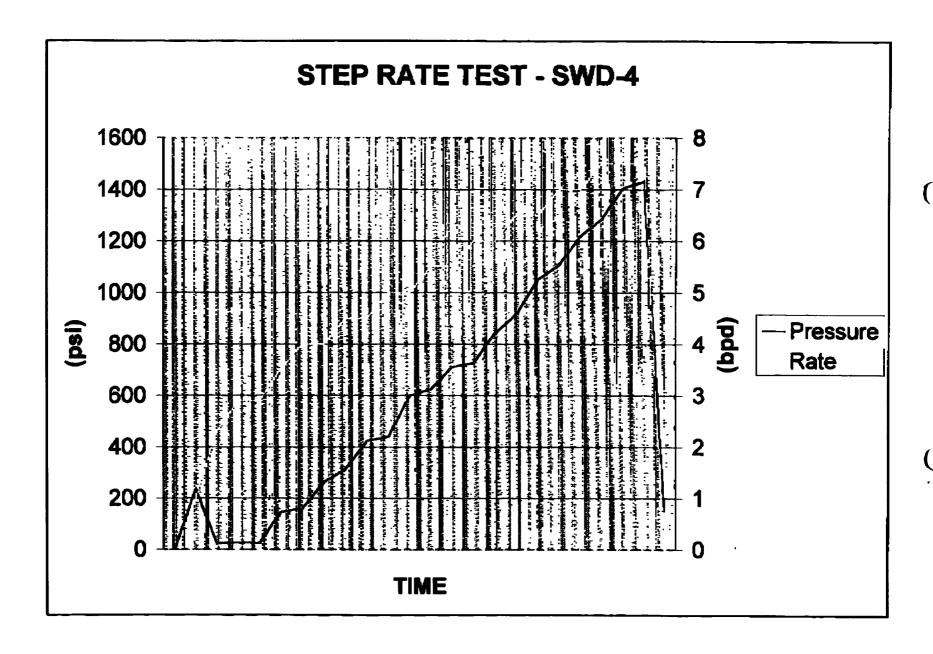
(psi)



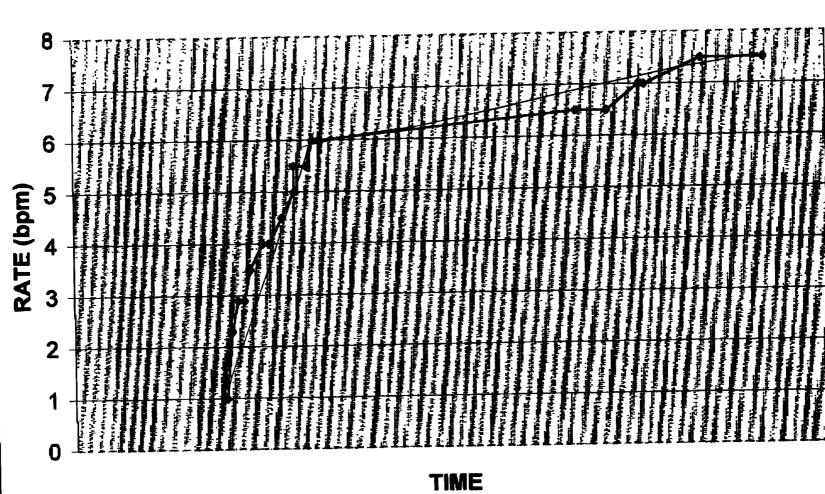
STEP RATE TEST DATA SWD-4

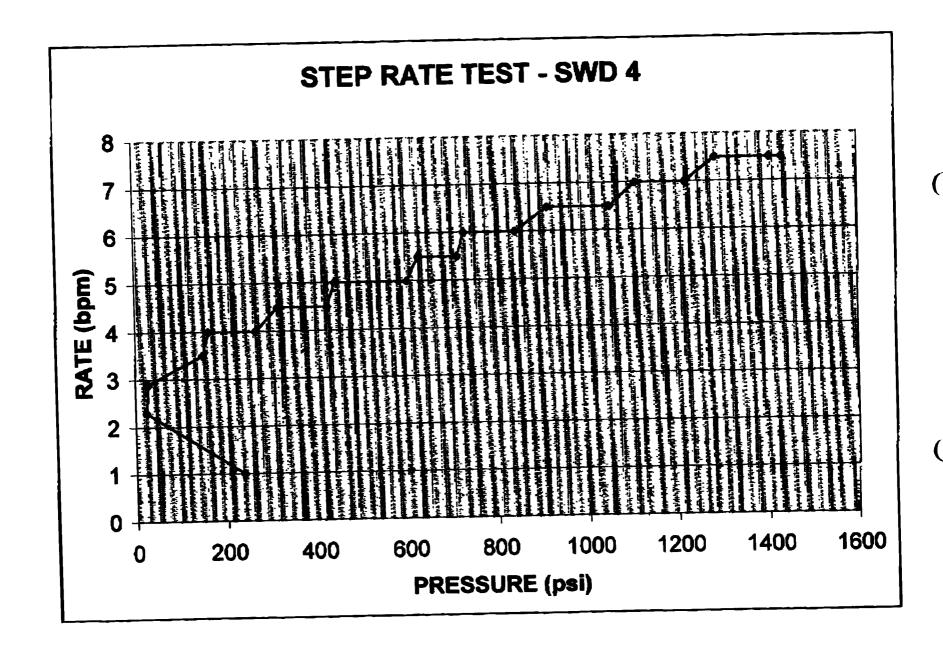
Time	Pressure	Rate
1237	0	
1244	238	1
1245	24	2.3
1246	28	2.9
1247	26	2.9
1248	148	3.5
1250	161	4
1251	266	4
1253	315	4.5
1253	425	4.5
1255	442	5
1255	600	5
1255	626	5.5
1257	713	5.5
1258	728	6
1259	843	6
1300	914	6.5
1305	1052	6.5
1310	1109	7
1311	1220	7
1320	1286	7.5
1320	1406	7.5
1330	1433	7.5
1330	154	0





STEP RATE TEST -SWD 4





STATE OF UTAH

	DIVISION	OF OIL, GAS AND MININ	NG		5. Lease Des	ignation a	nd Serial Number:	
					ML-48	217		
CLINDDY N	OTICES A	AND REPORTS ON	WE	116	6. If Indian, A	liottee or 1	ribe Name:	
SUNDA! IN	O NCES P	AND REPORTS ON	***	LLG	N/A			
Do not use this form for proposal	s to drill new wells d	deepen existing wells, or to reenter plugg	ed and	abandoned wells.	7. Unit Agree	ment Nam	e:	
		TO DRILL OR DEEPEN form for such pro			N/A			
1. Type of Well: OIL GAS I	OTHER:				8. Well Nam			
1. Type of West: OIL LI OAO E	a Officia.				Claws	on Spri	ngs State SWD-4	
2. Name of Operator:					9. API Well I	lumber:		
An	adarko Petrole	eum Corporation.			43-01:	5-3047	7	
Address and Telephone Number:	•				10. Field or P	ool, or Wi	ldcat:	
60 S	outh 700 Eas	t. Unit #1. Price. Utah 845	501:	435-637-3044	Undesi	gnated		
4. Location of Well Footages: 1320' FNI.	660' EEI				County: E			
Footages: 1320' FNL, QQ, Sec., T., R., M.:	000 FEL				State:	mery		
NE/4 NE/4,	Section 13, 7	Γ16S, R8E, SLB&M			U	tah		
11. CHECK APPRO	PRIATE BO	XES TO INDICATE NA	TUR	E OF NOTICE, R	EPORT,	OR O	THER DATA	
	ICE OF INTEN	IT			SUBSEQU			
•	bmit in Duplicate)		_	AL 4 •	(Submit Orig	_	• •	
☐ Abandon		lew Construction		Abandon *			New Construction	
Repair Casing		ull or Alter Casing	_	Repair Casing			Pull or Alter Casing	
☐ Change of Plans		Recomplete		Change of Plans			Reperforate	
☐ Convert to Injection		Reperforate	CX.	Convert to Injection	4		Vent or Flare	
☐ Fracture Treat or Acidize		/ent or Flare		Fracture Treat or Aci	aize		Water Shut-Off	
☐ Multiple Completion	□ W	Vater Shut-Off		Other				
☐ Other	<u> </u>		Jai	e or work completion				
Approximate date work will star	•			Report results of Multiple C	Completions en	d Recomo	letions to different reservoirs on WFI I	
			Report results of Multiple Completions and Recompletions to different reservoirs on WELL COMPLETION OR RECOMPLETION REPORT AND LOG form.					•
			* M	ust be accompanied by a cerr	nent verification	report.		

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

The Clawson Spring State SWD-4 well commenced injection and was converted to injection status on February 13, 2001 pursuant to the stipulations of the approved UIC Permit and The Oil and Gas Conservation General Rules.

C12, 5 2 2 2 3

ORIGINAL

tame & Signature: Title: Field Fourmon Date: 2-22-04

(This space for state use only)/



March 22, 2001

Ms. Carol Daniels State of Utah Division of Oil, Gas and Mining 1594 West North Temple, Suite 1210 Salt Lake City, Utah 84114-5801

Dear Ms. Daniels:

Please find enclosed, a Form 3160-4, Well Completion Report, Wellbore Diagram, and Logs for the first 13 below listed wells. The last 3 are State of Utah wells and I enclosed the same information for each of these wells, a Form 8, Well Completion Report, Wellbore Diagram. Should you require any additional information, please contact me at (281) 873-3899.

- 1) Smith Federal A-1
- 2) Helper Federal A-4
- 3) Helper Federal A-5
- 4) Helper Federal A-6
- 5) Helper Federal B-15
- 6) Helper Federal C-5
- 7) Helper Federal C-6
- 8) Helper Federal D-12
- 9) Helper Federal G-1
- 10) Helper Federal G-2
- 11) Helper Fedeal G-3
- 12) Helper Federal G-3
- 13) Helper Federal G-4
- 14) Helper Federal H-4
- 15) Helper State E-3
- 16) Clawson Springs State SWD#1
- 17) Clawson Springs State SWD #4

Sincerely,

ANADARKO PETROLEUM CORPORATION

April A. Leger

Sr. Engineering Technician

Enclosures

RECEIVED

MAR 23 2001

DIVISION OF OIL, GAS AND MINING

	AMENDED REPORT FORM 8 (highlight changes)										
	5. LEASE DESIGNATION AND SERIAL NUMBER:										
	ML-4										
	6. IF INDIAN, ALLOTTEE OR TRIBE NAME										
<u>sp</u>				EMENTN							
	1 '			NUMBER:		a SUD #4					
	9. API			ing st	.dl	e SWD #4					
			3047	7							
		LD A		L, OR WIL	DCA	Т					
				ION, TOW	NSH	IP, RANGE,					
	NE SECTION 13, T16S, R8E										
	12. CC		,		13.	STATE UTAH					
			FVATION	ONS (DF, F	RKB						
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HOW	/ MANY?		EPTH B PLUG S	ET:	MD VD	8220'					
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E &	SLU VOLUM		L) CE	MENT TO	- · · ·	AMOUNT PULLED					
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3				URFACI		NONE					
<u> </u>				4400'		NONE					
			-								
	'										
_	SIZE		DEPT	'H SET (MI	D)	PACKER SET (MD)					
					_1						
RD	SIZE	NO.	HOLES	PEC	RECE	RATION STATUS					
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				Open	Ξ	Squeezed					
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	DIVISION OF OIL, GAS AND MINING											ase des 4821 6	_	AND SE	ERIAL NUMBER:	
WELL CO	MPLET	ION	OR	REC	OM	PLET	ION F	REPO	ORT A	ND L	OG	6. IF	NDIAN, A	LLOTTEE C	R TRIE	BE NAME
1a. TYPE OF WELL:	:	OIL		l e	AS VELL		DRY [OTHER	Salt	Water Dis	2. 7. UN	7. UNIT or CA AGREEMENT NAME			
b. TYPE OF COMPLETION: NEW WORK DEEP- RE- DIFF. WELL OVER EN ENTRY RESVR. OTHER								1 '		and NUME Spring		te SWD #4				
2. NAME OF OPER		C					•		-				NUMBER 015-3			
Anadarko Po		Corp	orat	ton						PHONE	NUMBER:			POOL, OR	WILDC	AT
17001 Nort		<u>rive,</u>	Hous	ston,	Tex	<u>as 770</u>	60				375-1101	SW	D			
4. LOCATION OF W AT SURFACE: 1320' FNL AT TOP PRODU	_ & 660°	FEL	ORTED B	BELOW:								М	ERIDIAN:		T16	
SAME	тн: SAME	•										12. CO EME	YTNUC VO		13	3. STATE UTAH
14. DATE SPUDDE	· · · · · · · · · · · · · · · · · · ·	DATE T	D REA	CHED	16. D	ATE COMPI	ETED:							VATIONS (E	L DF, RKE	
9/20/00		1/8/0			1	15/01		Α	BANDONE		READY TO PROD	UCE X	6614	' GL		
18. TOTAL DEPTH	MD 83	20'		19. PLUG	i, BACI	K T.D.: MD TVD			20. IF M	ULTIPLE C	OMPLETIONS, HO	OW MANY?	21. DEF	TH BRIDGE UG SET:	TVD	8220'
22. TYPE ELECTR	IC AND OTHE									23.			CD71			
CBL/CCL/GRA	NEUTRON	/DENS 7 <i>3-0</i>	іту/2 7	CN/C	⊊ <i>R</i> •	- 3-a	3-01	/		WAS WELL		NO NO		YES	(Subr	mit analysis) mit report) mit copy)
24. CASING AND	INER RECOR	D (Repo	rt ali stri	Ings set in	well)					DIRECTIO	TAL GOTTETT		<u> </u>	<u> </u>		ООРЈУ
HOLE SIZE	SIZE/GRA	- i	WEIGH			OP (MD)	вотто	M (MD)		EMENTER PTH	CEMENT TYPE NO. OF SACKS		JRRY IE (BBL)	CEMENT	TOP **	AMOUNT PULLE
17 1/2"	13 3/8	3"	48	3#		0	315	<u> </u>		•	390SXS				ACE	NONE
12 1/4"	9 5/8		40			0	373				665 SXS		S		ACE	NONE
7 7/8"	5 1/2	"	26	#		0	832	0'			746 SXS	_		440	0,	NONE
25. TUBING RECO	ORD															Т
SIZE	DEPTH S			KER SET	(MD)	SIZ	E	DEPTH	H SET (MD)	PACKE	R SET (MD)	SIZE		DEPTH SET	(MD)	PACKER SET (MD
2 3/8"	741	.1 '	<u> </u>	7411'						OZ DEDEG	RATION RECOR					L
26. PRODUCING I		T-0/		Твотт	OM (M	ID) TOE	r (TVD)	Гвотто	OM (TVD)		L (Top/Bot - MD)	SIZE	NO. HO	N ES	PERFC	PRATION STATUS
FORMATION NAVA 10	NAME	 	(MD)		060	101	(140)	ВОТТО	W (1 V D)		-8060 OA	.66	103		- CO	Squeezed
NAVAJO	···		516	0	000					7010	-0000 OA	1.00	100	Open		Squeezed
		<u> </u>												Open		Squeezed
				1				<u> </u>						Open		Squeezed
28. ACID, FRACT		IENT, CE	MENT S	QUEEZE,	ETC.				······································				•			
	HINTERVAL		+	10 TO	A T 1 1 1	-NT			AM	OUNT AND	TYPE OF MATER	IIAL				
7616-8060	UA		<u></u>	NO TRE	AIMI	EN I										
														T	30. WE	LL STATUS:
29. ENCLOSED A	TTACHMENTS	i:								_		-	~		Pro- 10	•
_	TRICAL/MECH			AND CEME	ENT VE	ERIFICATION			BIC REPOR	T 🔲	OTHER:	HE		₹ ₩	mi	POSING
•												N	IAR 2	3 200	1	E Little Confidence

(CONTINUED ON BACK)

DIVISION OF OIL, GAS AND MINING

02/15/0		ISPOSAL			TERVAL A (As she		. 1	——————————————————————————————————————	1	Table :
	T PRODUCED:	TEST DATE: 02/16/0	11	HOURS TESTE	ED: 24	TEST PRODUCTION RATES:	OIL - BBL:	GAS - MCF:	WATER - BBL: 1182	PROD. METHOD:
CHOKE SIZ		CSG PRESS		VITY BTU-GAS		24 HR PRODUCTION	OIL - BBL:	GAS - MCF:	WATER - BBL:	INTERVAL STATU
		<u> </u>	<u> </u>		.1	RATES:) 0	0	1182	DISPOSAL
DATE SIDS	T PRODUCED:	TEST DATE:		HOURS TESTE	TERVAL B (As she	TEST PRODUCTION	LOU BRI	GAS - MCF:	WATER - BBL:	PROD. METHOD:
DATE FINS	T PHODUCED:	IEST DATE:		HOURS TESTE	:D:	RATES:	OIL - BBL:	GAS - MCF.	WATER - DDL.	PROD. METROD.
CHOKE SIZ	E: TBG. PRESS.	CSG. PRESS	API GRA	VITY BTU-GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES:	OIL - BBL:	GAS - MCF:	WATER - BBL:	INTERVAL STATU
				INT	TERVAL C (As she	own in Item				.
DATE FIRS	T PRODUCED:	TEST DATE:		HOURS TESTE	HOURS TESTED:		OIL - BBL:	GAS - MCF:	WATER - BBL:	PROD. METHOD:
CHOKE SIZ	E: TBG. PRESS.	CSG. PRESS	API GRA	VITY BTU - GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES:	OIL - BBL:	GAS - MCF:	WATER - BBL:	INTERVAL STATU
				INT	TERVAL D (As she	own in item		·· ··· · · · · · · · · · · · · · · · ·		···
DATE FIRS	T PRODUCED:	TEST DATE:		HOURS TESTE	ED:	TEST PRODUCTION RATES:	OIL - BBL:	GAS - MCF:	WATER - BBL:	PROD. METHOD:
CHOKE SIZ	E: TBG. PRESS.	CSG. PRESS	API GRA	VITY BTU - GAS	GAS/OIL RATIO	24 HR PRODUCTION RATES:	OIL - BBL:	GAS - MCF:	WATER - BBL:	INTERVAL STATU
32. DISPO	SITION OF GAS (So	d, Used for Fuel	, Vented, Etc	;.)	<u> </u>			· · · · · · · · · · · · · · · · · · ·		
22 611111	ARY OF POROUS Z	ONES (Include A	quifore):			12/	EORMATION	(Log) MARKERS:	·	
		-		l intervals and all drill-ste	em tests including		v. ronmanon	(LOG) MARKERS.		
				pressures and recoverie		dop				
For	mation		Sottom (MD)	Descripti	Descriptions, Contents, etc.			Name		
-		()	, ,				FERRON C	OAI		Measured Depth)
			ŀ				TUNUCK			3236
							NAVAJO			7602
				ı			IIAIAOO			7002
35. ADDIT	ONAL REMARKS (II	nclude plugging	procedure)							
				,						
36. I hereb	y certify that the for	egoing and attac	hed informa	tion is complete and co	orrect as determin	ed form all available	records.			
NAME (PLI	EASE PRINT) DAN	IEL J. VI	TOR			TITLE PRO	DUCTION E	NGINEER		
SIGNATUR	E Danie	10 Vat	m			DATE 3/2	1/01			
	- 6					10.00				
! comp ! drillin	must be submitt pleting or pluggir g horizontal late apleting to a diff	ng a new well erals from an	existing v	vell bore ! si	ignificantly de	eviously plugged a epening an existing rbon exploratory	ng well bore	below the prev		
	-		_	luction is measured	• •			·		
	SHOW THE HUTHOR									
ITEM 20:		w how reporte	d top(s) of	cement were deterr	mined (circulated	d(CIR), calculated(CAL), cemer	nt bond log(CBL)	, temperature si	urvey(TS))
ITEM 20: ITEM24:		•			mined (circulated		CAL), cemer	nt bond log(CBL)	, temperature si	urvey(TS))

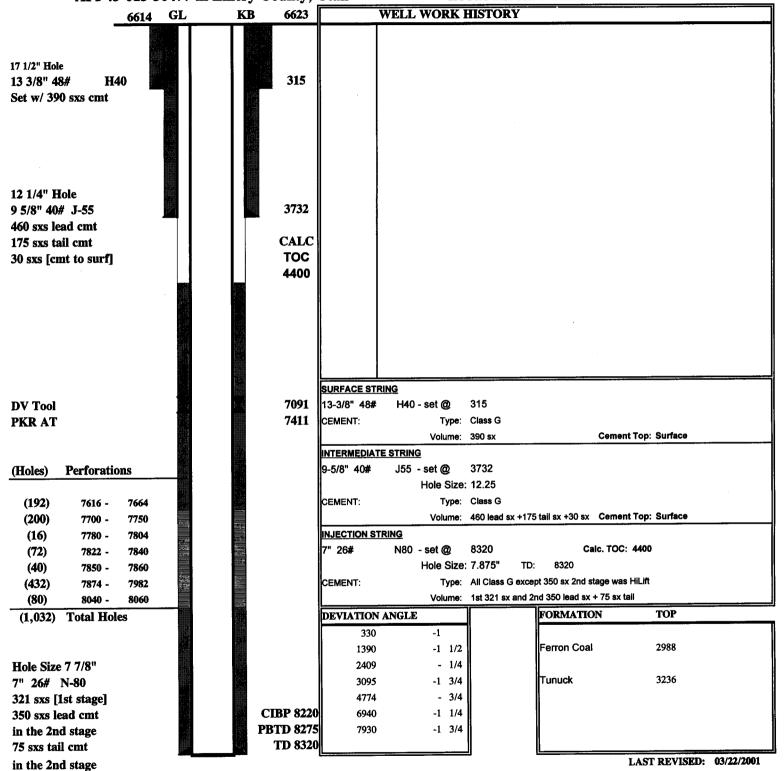
Clawson Springs SWD 4

1320' FNL & 660' FEL Sec 13-T16S-R8E API 43-015-30477 in Emery County, Utah

SPUD RIG OFF

SURFACE 09/20/2000 11/08/2000

1ST DAY DISPOSING WATER:2/15/01 1182 BWPD 450 PSI





adays Clauser Spring ST Said 4

FILE EDIT OIL GAS GAS PLANT UIC OIL and GAS REPORTS DB MAINTENANCE OPTIONS HELP DATA CONVERSION ☼ Well Data _ & X IX' **WELL HISTORY WELL ACTIVITY** WELL SEARCH **WELL DATA** APINUMBER 4301530477 TYPE OF WORK DRILL UNIT NAME LEASE NUMBER ML 48217 TYPE 3 D SPUD DATES APD DATA APD RECEIVED 8 11 2000 PROPOSED DEPTH - APD 8050 20 | 2000 DRY 9 14 2000 APD APPROVED PRODUCING ZONE - APD NAVA ROTARY 31 2000 APD EXTENSION DATE PLANNED START DATE SUNDRY REPORT AUTH CODE R649-3-3 PRWID WATER PERMIT PROPOSED WELL TYPE WD JUDY DAVIDSON APD CONTACT INTENT RECEIVED SINGLE / MULTIPLE ZONES 281-875-1101 CONTACT PHONE WORK COMPLETED 1320 FNL 0660 FEL LOCATION SURF - APD NEEDS RDCC REVIEW WORK CANCELED 1320 FNL 0660 FEL LOCATION ZONE - APD RDCC REVIEW DONE WELL COMPLETION & SUNDRY DATA LOGS RUN DILG/GR,CD/CN/GR,CBL/CCL/GR WCR RECEIVED 3 23 2001 PRODUCING ZONE NAVA DATE FIRST PRODUCED 2 15 2001 CHOKE MULT. ZONES COMPL. 0 16 2001 TUBING PRES. LOCATION AT TD 1320 FNL 0660 FEL TEST DATE 2 DIR SURV. | CORED | DST N N N DIRECT, HORIZ OIL - 24HR TEST 0 CASING PRES. API GRAVITY 00.00 COMPLETION METHOD | PERFORATED GAS - 24HR TEST 0 LATERALS COMPL. WATER - 24HR TEST 1182 COMPLETION DATE | 2 15 2001 WELL STATUS A BTU - GAS TD - MD | TVD | 8320 8320 WELL TYPE WD GAS-OIL RATIO 0 **TEST METHOD** PBTD MD | TVD 0 PERFORATIONS 7616-8060 COMMENTS Cancel Change Print Records **Get History Create New Rec** Next Rec Prev Rec Save NUM CAPS Record: 1/1 Exclusive Whistorycursor N≥ 4 (1.33 AM Start Mark Market Start Market GroupWise - Mailbox OIL & GAS INFORMA.

STATE OF UTAH DIVISION OF OIL GAS AND MINING

INJECTION WELL - PRESSURE TEST

Well Name: Clawson Spring Qtr/Qtr: NENE Section: Company Name: Anadark	5t SND 4 API Number:	43015 304 77 6 5. Range: <u>\$</u>	٤
Lease: State X Fe Inspector: Mark 1 force	e Federal Date: _ 7/21/	Indian	
Initial Conditions:			-
Tubing - Rate:	Pressure:_	psi	i
Casing/Tubing Annulus - Press	ure:psi		
Conditions During Test:			
Time (Minutes) 0 5	Annulus Pressure	Tubing Pressure	
10 15	1000 #	0 #	
20 25 30 Results: Pass/Fail	/000 #	0#	
Casing/Tubing Appulus Pr	psi ressure: O psi		
Casing/Tubing Annulus From Comments: Well was 7 tested of	taking water on	a Vaccum	during
Enney Cul Operator Representative			

STATE OF UTAH DIVISION OF OIL GAS AND MINING

INJECTION WELL - PRESSURE TEST

Well Name: Clausen Spring St SWD#4 API Number: 43015 30477 Qtr/Qtr: NENE Section: 17 Township: 145 Range: 88 Company Name: Anadarko Petroleum
Lease: State X Fee Federal Indian Date: 8-18-89
Initial Conditions: Tubing - Rate: 907 BB25 Pressure: 9si Casing/Tubing Annulus - Pressure: psi
Conditions During Test:
Time (Minutes) 0 11:20 10 15 11:35 20 25 30 11:50 Results: (Pass)Fail
Conditions After Test:
Tubing Pressure:
DAVE Wilcox Decretor Representative

STATE OF UTAH DIVISION OF OIL GAS AND MINING

INJECTION WELL - PRESSURE TEST

Well Name: <u>Clause's Spring St SwD#4</u> APIN Qtr/Qtr: Section: 17 Town Company Name: <u>Anadarko Petroleun</u>	lumber: <u>43015 3047 7</u> nship: <u>/45</u> Range: <u>85</u>
Lease: State X Fee Fe Date:	deralIndian
Initial Conditions:	
Tubing - Rate: 907 BBS	Pressure: psi
Casing/Tubing Annulus - Pressure:	_ psi
Conditions During Test:	
Time (Minutes) O 11:20 5 10	Tubing Pressure
15 11:35 1080#	0 #
20	
25	
30 (11:50 <u>1090 #</u> Results: (Pass)Fail	
Conditions After Test:	RECEIVED
Tubing Pressure:psi	DEC 15 2009
Casing/Tubing Annulus Pressure:	Part on our
COMMENTS: Annulus gained 10 # d	·
Dave Wilcox Operator Representative	

STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING

	TRANSFER OF AU	THORITY TO II	NJECT	
Well Name and See Wells	Number			API Number See Wells
Location of Well				Field or Unit Name
Footage :	er er en tregger i klike grette kant blike i	County:		Lease Designation and Number
QQ, Section,	Township, Range:	State: UTAH		Lease Designation and Number
				RECEIVED
EFFECTIVE I	DATE OF TRANSFER: 4/1/2013			APR 0 9 2013
				DIV. OF OIL GAS & MINING
CURRENT OF	PERATOR			
Company:	Anadarko Petroleum Corporation	Name:	Jaime S	charnowske
Address:	P.O. Box 173779	Signature: '	Jaim	e Schannewsk
	city Denver state CO zip 80217	Title:	Regulato	pry Analyst
Phone:	(720) 929-6000	Date:	4/8/2013	3
Comments:	The operator is requesting authorization to trans Anadarko E&P Onshore, LLC. The state wells we be under bond number WYB000291.	sfer the wells from A Vill be under bond n	Anadarko umber 22	Petroleum Corporation to 2013542, and the federal well will
NEW OPERAT	TOR			
Company:	Anadarko E&P Onshore, LLC	Name:	Jaime S	charnowske
Address:	P.O. Box 173779	Signature:	Jain	ne Schamanski
	city Denver state CO zip 80217	Title:	Regulato	pry Analyst
Phone:	(720) 929-6000	Date:	4/8/2013	
Comments:				
Commonto				
(This space for St Transfer ap Comn		Approval D	ate:	<u>1/10/13</u>

API Well Number	Injection Permit Number	Well Name	Section	Township	Range	Mineral Lease Type	Current Well Status	Well Type
4300730361	UIC-201.1	HELPER ST SWD 1	3	145	10E	ML 45805	Active	Water Disposal Well
4301530477	UIC-266.1	CLAWSON SPRING ST SWD 4	13	165	8E	ML 48217	Active	Water Disposal Well
4300730555	UIC-243.1	FED F-2 SWD	8	145	10E	UTU 65762	Active	Water Disposal Well
4300730721	UIC-264.1	CLAWSON SPRING ST SWD 1	36	1 5S	8E	ML 46106	Inactive	Water Disposal Well



State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA
Division Director

June 25, 2014

Anadarko E&P Onshore, LLC 60 S. 700 E. Unit #1 Price, UT 84501

SUBJECT:

Pressure Test for Mechanical Integrity, Fed F-2 SWD (API# 43-007-30555) &

Clawson Spring St SWD 4 (API# 43-015-30477) Wells, Carbon & Emery

Counties, Utah:

To Whom It May Concern:

The Underground Injection Control Program, which the Division of Oil, Gas and Mining (DOGM) administers in Utah, requires that all Class II injection wells demonstrate mechanical integrity. Rule R649-5-5.3 of the Oil and Gas Conservation General Rules requires that the casing-tubing annulus above the packer be pressure tested at a pressure equal to the maximum authorized injection pressure or 1,000 psi, whichever is lesser, provided that no test pressure is less than 300 psi. This test shall be performed at least every five-year period beginning October 1982. The following well requires a current test:

Fed F-2 SWD 43-007-30555

Clawson Springs St SWD 4 43-015-30477

13 165 8E

Please make arrangements and ready wells for testing during the week of August 11th, 2014, as outlined below:

- 1. Operator must furnish connections, and accurate pressure gauges, hot oil truck (or other means of pressuring annulus), along with personnel to assist in opening valves, etc.
- 2. The casing-tubing annulus shall be filled prior to the test date to expedite testing, as each well will be required to hold pressure for a minimum of 15 minutes.
- 3. If mechanical difficulties or workover operations make it impossible for the well(s) to be tested on this date the test(s) may be rescheduled.
- 4. Company personnel should meet a DOGM representative(s) at the field office or other location as negotiated.

Page 2 June 25, 2014 Anadarko E&P Onshore, LLC

5. All bradenhead valves with exception of the tubing on the injection well(s) must be shut-in 24 hours prior to testing.

Please contact me at (435) 820-0862 to arrange a meeting time and place or to negotiate a different date, if the date(s) specified is unacceptable.

Sincerely,

Bart Kettle

Environmental Scientist

bk/dj/js

cc: Dan Jarvis, Operations Manager Well File